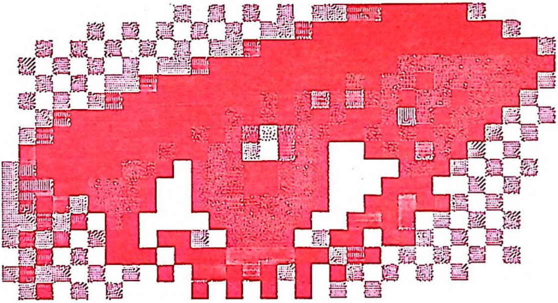

GDS

Graphics Display System

Imaging Software by Raxsoft Incorporated
Distributed by Phase II Electronics, Inc.

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GDS

Graphics Display System

User Manual

GDS is dedicated to obscure geekoid buffoonerisms.

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"Their eyes are open!"
(Startrek TNG)

Introduction

Welcome to the wonderful world of GDS! In early 1991, GDS was born, and has since become the most powerful and highly acclaimed graphics file viewer available for IBM Personal Computers and compatibles.

What GDS Is

GDS *(``Graphics Display System'')* is an efficient graphics file viewer for IBM's and compatibles. GDS is the most highly praised file viewer by the system operators managing the graphics forum of CompuServe (the PICS forum).

What GDS Is Not

GDS is not a paint or draw program. Paint programs allow the user to load and modify images directly. GDS simply allows the user to modify the way the image is displayed, but not its literal contents.

Enjoy GDS

GDS is for you, the user. GDS provides a very simple tool designed to make your life easier. GDS is intended for what users do with pictures: look at them.

So sit back, fasten your seat belt, and hang on!

About This Manual

This manual was designed to help you find what you're after as fast as possible. To make this process easier, the following conventions are used throughout this manual:

All text which deals directly with the computer is printed in the `COURIER` typeface. Examples are text on the screen, filenames, keystrokes, and DOS command lines. For example, `GDS.CFG` is a filename, and ``` ``AboUt'' ``` is one of the menus on the GDS file screen.

All keystrokes are displayed in brackets. For example, pressing a key is presented as `[P]`, or ``press the `[P]` key.'' Similarly, holding down a key and pressing another is presented as `[Shift]+[P]`.

This manual documents two versions of GDS. GDS is distributed as an inexpensive file viewer, as well as a professional scanning and file manipulation tool. Several features described in this manual appear only in the professional version of GDS, and are marked with the superscripted word ``$^{\text{PRO}}$''. For example, the palette control menu (`Palette`), which only exists in the professional version, is marked like this: `Palette`$^{\text{PRO}}$.

Some functions of GDS require a mouse. Most of this manual assumes you have a mouse. Where necessary and appropriate, keyboard equivalents are given.

Chapter 1 - Installation

Minimum System Requirements

To use GDS, you must have:

An IBM PC, XT, AT (or 100% compatible computer)
At least 480,000 bytes free memory at a DOS command
    prompt, as reported by `CHKDSK` (included with DOS)
An EGA, VGA, or ``Super VGA'' display adapter

Quick Installation

If you are not an experienced DOS user, we recommend that you read through this entire section before you install GDS. If you consider yourself to be a ``DOS guru'', you may simply copy the files from the distribution diskette(s) into a subdirectory on your hard drive, set a path to `GDS.EXE`, and browse through the appendices of this manual.

The installation batch file (`INSTALL.BAT`) is designed to create a sub-directory off of the root directory onto a hard drive and to copy GDS distribution files into it. `INSTALL.BAT` *will not* delete or modify any files other than those included with GDS. It is up to the user to add a DOS ``PATH='' statement in the `AUTOEXEC.BAT` file to make GDS executable from any path (see section below entitled *The Path To GDS*).

To install GDS from the floppy drive, carefully follow the steps below:

1) Turn on your machine and wait for the DOS prompt. The DOS prompt usually looks like this:

```
C> _
```

2) Insert your GDS distribution diskette into floppy drive `A:` or `B:`. If GDS came with more than one distribution diskette, insert the diskette labelled ``Disk 1'' or ``Program Disk''.

3) Type the drive letter followed by `[:]` (a colon), and press the `[Enter]` key.

```
C> A:[Enter]_
```

4) Type `INSTALL`, followed by `[spacebar]` and the drive letter of the hard drive you would like to install GDS onto (usually it's drive `C:`). Press `[Enter]` to start the installation process.

```
A> INSTALL C:[Enter]_
```

5) For any questions concerning DOS, consult your DOS manual.

The `INSTALL.BAT` file should create a sub-directory on your hard drive called GDS, and copy all of the distribution files onto the hard drive. Depending on the specific version of GDS, you may be asked to insert different diskettes.

If something goes wrong, look through Appendix E - Common Problems and Solutions.

Distribution Files

GDS comes with the following files:

Filename	Description
`GDS.EXE`	Main executable file.
`GDS.OVL`	Overlay file.
`GDS.CFG`	Main configuration file. This file should be kept in the same directory with GDS.EXE. Avoid adding customization options to this file; modify this file only if you need to prevent GDS from recognizing specific video modes.
`GDSUSER.CFG`	User specific configuration file. This file should be kept in the same directory with GDS.EXE. Add any configuration command line options (discussed later) which help customize GDS for your needs.
`GDSLOCAL.CFG`^{PRO}	Configuration file designed to be placed in directories where special functions are done. Usually, this configuration file is used by BBS sysops who frequently generate huge numbers of array images, or users who scan certain types of media, each of which require special gamma settings.
`README.TXT`	Additional information which did not make this publication of the manual. Please read through this file to get information which may have changed since this manual was printed.
`SAMPLE.GIF`	Sample GIF file. This is an image which may be displayed on any EGA or VGA system, regardless of the manufacturer of the computer or video system. It is provided to verify that GDS is functioning properly after installation.
`INSTALL.BAT`	Installation ``batch'' file. This file installs GDS onto a hard drive from the original GDS diskette(s).

The Path To GDS

DOS allows users to tell it where the most commonly used programs are located, so they can be run from anywhere. The path is set in the `AUTOEXEC.BAT` file. There are countless ways DOS machines are configured, and it is impossible to describe exactly how to change the path control for your system. The `AUTOEXEC.BAT` file usually contains a statement similar to the following statement:

```
PATH=C:\DOS;C:\
```

In this example, there are two paths. The first is ``C:\DOS'', and the second is ``C:\'' (the *root directory*). Each path specification must be separated by a semicolon. Some versions of DOS and some programs are sensitive to whether or not there is a trailing backslash (``\''), so you may want to avoid using trailing backslashes altogether. Consult your DOS manual for more information.

If GDS's path is added to this statement, the user can execute GDS from any DOS prompt simply by typing `GDS`. For the above example, the `AUTOEXEC.BAT` file would need modifications to include the following path statement:

```
PATH=C:\DOS;C:\;C:\GDS
```

Chapter 2 - Getting Started

Running GDS

To start GDS from a DOS prompt, type `GDS`, followed by `[Enter]`:

```
C> GDS[Enter]
```

The computer will load GDS and then display the ``file screen'', which is the main display.

GDS will not run unless it knows what to support. If GDS is unable to automatically detect your video adapter, it will issue an error message and return to DOS:

```
Unable to find video card.
GDS cannot automatically run with unrecognized
   video cards.
```

Depending on your hardware, you may need to explicitly tell GDS what type of video adapter you have using the */name* command line parameter. Please refer to Appendix D for an overview of supported video hardware.

After running GDS, you may notice that GDS does something out of the ordinary with the file list. GDS periodically reads your graphics files to get needed information. The program still functions normally while reading this file information.

Instant View

To display an image which is displayed in the file list, just double click on the filename with the mouse. If you do not have a mouse, you may use the arrow keys to move the file cursor through the file list. Press `[Enter]` on the file you wish to display.

The File Screen

The top line of the file screen contains the version number of your copy of GDS, your name and phone number, and the date at which you will stop receiving automatic updates to the GDS software. Don't worry, GDS will continue to run after this date; it is only to remind you about software updates.

Just below the top line is the copyright notice, and a bright green message telling you that you can press `[Esc]` to exit GDS. The `[Esc]` key in GDS generally means ``*get me out of here!*''

Across the line under the copyright notice and across the bottom of the screen are menu bars which provide all of the general runtime options for GDS. Each menu can be activated by holding down the `[Alt]` key and pressing the highlighted letter in the menu name. For example, `[Alt]+[U]` activates the `AboUt` menu (the ``U'' is highlighted on the screen). After the menu is up, you may use the arrow keys to highlight the menu options.

The menus are more easily navigated using a mouse. Simply move the mouse over the menu name, press down a button, and drag the mouse up or down to highlight the desired option. Let go of the button to select it. The alternate method (which some prefer) is to quickly click on the menu name and then move the mouse to highlight the desired option and click a mouse button to select it.

All of the files available for viewing are displayed in columns in the middle area of the screen. The information displayed for each file can be customized by using the `FILESHOW` menu, or the `/F` command line parameter.

You may toggle the selected state of each file by pressing `[spacebar]` or clicking on it with the mouse. To select ranges with a mouse, hold down the mouse button and drag the mouse to the opposite side of the range you want. Holding down the `[Shift]` key allows selective toggling of files or ranges of files using the mouse *(this is extremely useful for setting up slideshows and arrays).*

Files As Command Line Parameters

If no command line parameters are given, GDS will assume all of its own defaults and read all of the files in the currently logged directory to obtain its list of displayable files. This behavior can be easily modified by supplying some common command line parameters.

All command line parameters start with a slash (``/'') or a dash (``-''), unless they are file specifications *(see Appendix B - Command Line Parameters).* In fact, any command line parameter which does not start with a slash or a dash is assumed to be a file specification.

The most used command line parameters are file specifications. These tell GDS where to look for files, and which files it is allowed to use. For example, the following line will tell GDS to only recognize graphics files which have the `.PCX` file extension:

```
C> GDS *.PCX
```

There is no limit to the number of file specifications GDS can handle on the command line. You may want to look at several file types at once, and you may also use drive and path specifications in your file specifications:

```
C> GDS *.PCX C:\DP\ARTWORK\*.LBM C:\MARK\PEG*.GIF
```

If you specify a drive and/or path, but do not specify a file specification, GDS will assume you want to view all files in that directory:

```
C> GDS C:\GIFS
```

Problems When Viewing

There are two viewing problems which occur frequently. The first happens when GDS has a problem reading the header of a graphics file, or has trouble identifying a file which was specified. When this happens, GDS will assume there has been a disk error and keep trying to identify the file. This causes the filename in the file list to flash continuously. The two most likely reasons this happens are: A) the file is corrupted, or B) the file has the same extension as a common graphics file, but is not a graphics file (this happens quite a bit with ColorRIX files because of their varied extensions). For more information, see Appendix E - Common Problems and Solutions.

The second viewing problem occurs when a graphics file is corrupted. Symptoms of this problem are A) GDS displays a blank graphics screen, B) GDS displays part of the image and then stops, and C) GDS displays garbled graphics data. With some graphics formats, GDS is sometimes able to detect corrupted data and simply stop displaying at the point of corruption. With PCX and MAC files, there is no way to tell if the data is valid or not, and GDS may display garbled data.

Chapter 3 - File Screen Menus & Buttons

Customization

Most menus and options have command line parameters which allow the user to customize their default setting. For more information, see Appendix B - Command Line Parameters.

AutO/LOck

The upper left corner of the file screen contains a button which toggles between AutO and LOck. The state of this button determines whether or not GDS will automatically search for what it thinks to be the best resolution at which to display files. If this button is set to AutO, GDS will automatically use the closest possible resolution. If this button is set to LOck, GDS will always use the resolution indicated by the Res: menu.

Res: *(followed by current default resolution)*

The Res: menu determines the default display resolution for both graphics *and* text modes. Selecting a specific graphics mode will tell GDS to use *only* that specific mode if the AutO/LOck button is set to the LOck state. Selecting a text mode from this menu will immediately change the text size of the file screen (very useful for large numbers of files).

All of the graphics and text display resolutions in this menu are read from the configuration files at startup. If you are technically inclined enough and know your card can support modes that are not in the configuration files, you may wish to add them to GDSUSER.CFG. For more information about the configuration files, see Appendix C - Configuration Files.

View

The View menu allows the user to view slideshows and arrays of reduced images. These two view modes display all selected files, or, if no files are selected, all of the files in the file list. This option is used to create slideshows and arrays of reduced images. For more information, see Chapter 8 - Slideshows and Chapter 9 - Reduced Image Arrays.

Alias: *(followed by ``Off'', ``Hrz'', or ``Max'')*

The Alias: menu determines what kind of anti-aliasing will be performed on reduced images. Anti-aliasing is the process of eliminating jagged edges when reducing an image. There are three levels:

0) No anti-aliasing *(``Off'')*. In this mode, GDS will not attempt to anti-alias images at all. All image reduction occurs by copying individual pixels from the source image to generate the destination image. This mode is the fastest, with the poorest image quality.

1) Horizontal anti-aliasing *(``Hrz'')*. In this mode, GDS tries to find colors which match a horizontal strip of the source area in order to determine the color for each pixel of the destination image.

2) Horizontal and vertical anti-aliasing *(``Max'')*. In this mode, GDS takes the entire source image into account when generating the destination image. This mode is the slowest, but has very high quality output.

AboUt

This menu exists solely for your entertainment.

Sort: *(followed by current sort order)*

The `Sort:` menu determines the order in which the file list is to be displayed. Select the sort menu and the desired sort order, and GDS will immediately update the display. There are several selections; the default is *by name*. All other sort orders depend on information contained only in the files. If this information has not already been read, GDS must read the information before it can update the file display.

Mouse: *(followed by either ``Bits'' or ``Boxy'')*

The `Mouse` button determines how the mouse cursor is displayed in text mode. In text mode, GDS uses an undocumented technique which displays the mouse cursor as a graphics image. Some display adapters do not support this method, and may display flickering garbage on the screen wherever the mouse is, or do nothing at all. If this happens, just type `[Alt]+[M]` to display the mouse as a solid character cell. Unfortunately, the solid character cell method doesn't feel nearly as nice as the graphics method.

Dither: *(followed by ``Off', ``Norm'', or ``High'')*

The `Dither:` menu determines what kind of dithering will be performed when displaying images. Dithering is a technique which mixes colored dots together in patterns such that the human eye perceives more colors than actually exist. There is very little difference in speed of display for the three different levels of dithering; they are all very fast. There are three levels:

0) No dithering *(“Off”)*. In this mode, GDS will simply choose the closest color when remapping colors. This mode results in the poorest image quality.

1) Two color dithering *(“Norm”)*. In this mode, GDS finds two colors whose average color is as close to the desired color as possible, and mixes them in a checkerboard pattern in order to create the appearance of a third color. This mode is by far the best to use with 256 color screen resolutions.

2) High dithering *(“Max”)*. In this mode, GDS behaves the same as with two color dithering, but tries to use a 1:3 dither pattern rather than a 1:1 checkerboard pattern. Although this mode generates the most mathematically correct results, it can sometimes introduce noticeable pixellation, and is therefore not very well suited to 256 color screen modes. However, this mode works very well for converting 256 color images to 16 color screen modes.

FileShow: *Ex Re Bi Sz*

The `FileShow:` menu determines which information is presented in the file list. Each item in this menu toggles a pair of letters displayed after the `FileShow:` menu. Any selection from this menu causes the file display to be immediately updated.

If the resolution or number of bits per pixel is chosen for display in the file list, GDS must make sure it knows them all before it tries to display them. This may cause a delay if you are working with a large number of files. Even on the slowest of machines, reading every file should be relatively quick.

Palette: *(# of colors allowed)*$^{\text{PRO}}$

The `Palette:` menu controls the maximum number of colors to use in GDS's artificial palettes and has an option which allows the user to force GDS to use and/or generate a particular palette for a file or set of files. The default setting of this menu is to use all 256 colors. This menu is only available in professional versions of GDS, and is discussed further in Chapter 12 - Processing Scanned Images.

sCan: *(followed by “Mono”, “Grey”, or “Color”)*$^{\text{PRO}}$

The `sCan:` menu allows the user to specify what type of scanning is to be done, and to start scanning. This menu is only available in professional versions of GDS, and is discussed further in Chapter 11 - Scanning Images.

Useful Command Line Parameters

Some useful command line parameters related to the file screen are as follows (see Appendix B for complete listing):

`/B`*(n)*	Set default mouse mode (0=character cell, 1=bitmapped cursor).
`/G`*(h)*`x`*(v)*`x`*(c)*	Set default graphics resolution (default is `/G320x200x16`).
`/K`*(n)*	Set automatic GIF89a comment record display flag (0=off, 1=on).
`/R`*(n)*	Set default state of `AutO/LOck` button (0=auto, 1=lock).
`/T`*(n)*`x`*(n)*	Set default file screen text mode (default is `/T80x25`).
`/V`*(n)*	Set orientation of file screen scrolling (0=horizontal, 1=vertical).

Chapter 4 - Viewing Images

Getting the Picture

To view a single image, simply use the mouse to click twice (double click) on the name of the file you want to view. If you do not have a mouse, use the arrow keys to move the file list cursor over the file you want to view and press `[Enter]`.

If GDS is not doing what you think it should, it is a good idea to check the setting of the `LOck/AutO` button on the file screen, and the current resolution displayed in the `Res:` menu.

Mouse View Menus

When viewing single images, GDS provides simple pull-down mouse menus. To access these menus, move the mouse cursor to the top of the screen and hold down a mouse button. To make a selection, release the mouse button while the desired option is highlighted. Releasing the mouse button while no option is higlighted will cause the menus to harmlessly disappear.

These menus contain various options that control the color, orientation, editing, and saving of the current image. Options may have keyboard equivalents. If there is a keyboard equivalent, the keystroke is displayed to the right of the menu option.

The function of the various options are described herein as they apply.

Color Adjustment Keys

There are simple palette adjustments for red, green, blue, contrast, brightness, and color. Each of these levels has an associated pair of keys, and when you press either key while holding down `[Shift]`, the level is reset.

GDS adjusts the color levels and brightness level displayed using ``gamma curves''. Gamma curves adjust the brightness of the image, while compensating for the characteristics of the CRT. *(Gamma curves adjust the color and brightness on a logarithmic scale rather than a linear scale.)*

The keys available for adjusting the palette are:

`[f1]/[f2]`	Decrease/increase red palette gamma level
`[f3]/[f4]`	Decrease/increase green palette gamma level
`[f5]/[f6]`	Decrease/increase blue palette gamma level

[f7]/[f8]	Decrease/increase palette contrast level
[f9]/[f10]	Decrease/increase palette brightness gamma level
[f11]/[f12]	Decrease/increase palette hue adjustment level
[,]/[.]	Decrease/increase palette color level
[Shift]+[f1]/[f2]	Reset red palette gamma level
[Shift]+[f3]/[f4]	Reset green palette gamma level
[Shift]+[f5]/[f6]	Reset blue palette gamma level
[Shift]+[f7]/[f8]	Reset palette contrast level
[Shift]+[f9]/[f10]	Reset palette brightness gamma level
[Shift]+[f11]/[f12]	Reset palette hue adjustment level
[Shift]+[,]/[.]	Reset palette color level
[`]/[~]	Invert palette (toggle on and off)

GDS modifies the levels for red, green, blue, and brightness using a logarithmic curve. This seems to be the preferred method in the digital imaging industry for adjusting relative brightnesses as it is very similar to the way the phosphors in video displays respond to current.

Exiting View Mode

Press [Esc] to exit to the file screen. It is sometimes useful to exit GDS as fast as possible (like when your boss walks in) which can be done by hitting [Esc] a few times. There is rarely harm in hitting [Esc] repeatedly; DOS interprets an [Esc] character as *``start a new command line''*.

GIF89a Comment Records

When using the [Esc] key to exit view mode, you may notice that GDS pops up a window on some files with some text in it. These are comment records from GIF89a files. They are automatically displayed upon exiting GDS's single image view mode. You can also list these comment records without viewing the image they are in by pressing [Ctrl]+[L] *(for ``list'')* when the file cursor is highlighting the image file. The automatic display of these images can be disabled by using the /K0 command line parameter.

Automatic Mode Selection

When the `Auto/Lock` menu is set to `Auto`, GDS automatically chooses a display resolution with which to display the image. It does this by first scanning to find the closest resolutions to the image. After it has the best choices available for size, it checks to see which screen modes most accurately match the desired number of colors. If necessary, GDS will sacrifice the size of the image slightly in order to obtain enough colors. It is far better to sacrifice image size than most of the color capability. After all, color is a resolution in itself.

Odd Image Sizes

If an image is too big to fit in the largest screen mode, GDS may automatically scale the image down to fit. When an image is smaller than the best screen size, however, GDS will not scale it up to fit. Some images may not fit precisely onto the screen.

To fit images to the screen, press `[Alt]+[F]`. GDS tries to fit the image to the screen in the best way it can. Depending on the exact image, this may not produce the desired results.

If `[Alt]+[F]` does not resize the image properly, press the `[spacebar]` to reset the scaling of the image to its original scale and try using the `[+]` and `[-]` keys.

Some images do not fill the screen, and have a very odd shape all together. When dealing with these files, GDS sometimes assumes something incorrectly about the image and chooses an inappropriate mode for the picture. This happens because GDS can't ``see'' what is wrong. Most images are in one of a few different screen sizes, and follow some very simplistic rules about resolution.

When GDS picks the wrong mode to display an image in, it is up to the user to press `[Esc]`, choose a resolution from the `Res:` menu, lock the screen mode with the `Auto/Lock` button, and view the file again.

Useful Command Line Parameters

Some useful command line parameters related to viewing images are as follows (see Appendix B for complete listing):

/!*(n)*	Turn on/off beep after displaying image (0=off, 1=on).
/A*(n)*	Set default anti-aliasing level.
/D*(n)*	Set default dithering level.
/G*(h)*x*(v)*x*(c)*	Set default graphics resolution (default is /G320x200x16).
/K*(n)*	Set automatic GIF89a comment record display flag (0=off, 1=on).

Chapter 5 - Saving Images

Saving Images Using Mouse Menus

To save a displayed image, pull down the `File` mouse menu and choose the desired save format. GDS displays a status message in the middle of the screen as it writes the file. Afterward, GDS returns to the file screen and offers an opportunity to change GDS's default file name.

Saving Images With the Keyboard

If there is no mouse available, there are keyboard equivalents available. The following keystrokes write files in the indicated formats:

`[Alt]+[B]`	Write `.BMP` file (Windows 3.0)
`[Alt]+[L]`	Write `.LBM` file (Deluxe Paint II).
`[Alt]+[P]`	Write `.PCX` file (ZSoft)
`[Alt]+[R]`	Write `.RIX` file (*uncompressed* ColorRIX).
`[Alt]+[W]`	Write `.GIF` file (CompuServe GIF87a compliant).

Cropping An Image

GDS normally writes out the entire screen. Sometimes it is useful to save only part of an image, rather than the entire screen. If a mouse is present, an image may be cropped by carefully following these steps:

1) Press `[Alt]+[C]` or choose the `Set Save Rect` option from the `File` mouse menu.

2) Move the mouse cursor to the upper left of the rectangle to be saved and press and hold down a mouse button.

3) Drag the mouse cursor to the lower right of the rectangle to be saved and release the mouse button. GDS beeps to let you know that it received the input.

Any save operation after the image has been cropped will write only the area enclosed by the save rectangle. *(Note: ColorRIX files have no provision for partial or odd sized images and cannot support this feature. When GDS writes a ColorRIX file, it ignores the save rectangle and always writes the entire screen.)*

Chapter 6 - Managing Image Files

File Screen Keyboard Use

The file screen has separate sets of commands. Menu commands use the `[Alt]` key, movement and exit commands use simple keystrokes, and file control commands use the `[Ctrl]` key. When the `[Ctrl]` key is held down, GDS displays a window indicating which control commands are available. Release the `[Ctrl]` key to cause the window to disappear.

Deleting Unwanted Files

As images are modified, a fair number of unwanted files (trash) may pile up. To delete unwanted files, move the file cursor over the desired file and press `[Ctrl]+[D]`. GDS prompts to verify that the file should be deleted, and then deletes the file.

Renaming Files

A very common sequence is for a file to be viewed, modified, and saved with the intent to replace the original. Although GDS won't automatically replace the original file, it does make this easy to do. Delete the original file, move the file cursor over the replacement file, press `[Ctrl]+[R]`, and specify the name of the original file.

Copying Files

Since the pictures viewed with GDS are bound to be beautiful, users want to give copies to their friends. To make an exact duplicate of a file, press `[Ctrl]+[C]` followed by the destination drive and/or path and filename, and GDS will copy the file. Note that the copy of the file does not appear in the file screen's file list, because the original is already displayed.

Transferring Files

When files are not in the right place, users want to move *(or transfer)* them. Move the file cursor over the file to transfer and press `[Ctrl]+[T]`. GDS prompts for the destination path and/or filename. GDS will copy the file completely, and then delete the original. GDS will *not* delete the original unless the file is properly copied.

Hiding Files

Work is often done with images which are categorized in strange ways. In these cases, it is useful to hide a file from the list. To hide a file, move the file cursor over the file to hide and press `[Ctrl]+[H]`. This command does not delete or modify the file in any way, and it does not set DOS's ``hidden'' file attribute flag. The file will no longer be displayed in the file list.

Chapter 7 - Processing Images

Changing Image Size

Sometimes images do not fit precisely on the screen, or they need to be forced to fit in a different resolution. Pressing `[Alt]+[F]` will fit an image into the current screen *(this command is also in the* `Size` *mouse menu).* However, this command can occasionally misjudge the characteristics of a particular image, depending on several factors.

When `[Alt]+[F]` doesn't work as expected, or when an image is squished or stretched one way or another, the arrow keys can be used to manually stretch the image's dimensions. The arrow keys move the lower right hand corner of the image in relation to its upper left corner. For rapid movement of the lower right corner, hold the `[Shift]` key and GDS will move the lower right corner by twenty units per keypress rather than one.

If the image looks correct but is too big or too small, the `[+]` and `[-]` keys can be used to increase and decrease the image size by 5%. For graphics specialists, it is important to know that the `[+]` and `[-]` keys operate on the *current* image coordinates, and not on the *original* image coordinates, which may cause rounding errors in successive iterations. This can easily be seen when reducing an image down to about 10% of its original size.

Changing Brightness and Colors

Refer to Chapter 4 - Viewing Images for more information about changing colors.

Taking a Closer Look

GDS allows mouse users to zoom in on areas of a picture by providing the `[Alt]+[Z]` command *(this command is also in the* `Size` *mouse menu).* To use `[Alt]+[Z]`, carefully follow these steps:

1) Press `[Alt]+[Z]`.

2) Move the mouse cursor to the upper left of the rectangle to be magnified, and press and hold down a mouse button.

3) Drag the mouse cursor to the lower right of the rectangle to be magnified, and carefully release the mouse button.

4) GDS erases the screen and redraws the image with the specified rectangle as large as possible on the screen.

The zoom function can magnify images up to 64 times their normal size. If the zoomed area is smaller than the maximum zoom which can be performed, GDS will automatically reduce the image to 64 times the original size, and center the specified zoom rectangle.

Panning Images

There are two ways to pan. The easiest way is to use the `Pan Image With Mouse` command in the `Edit` mouse menu *(also available using `[P]`; this command only available to mouse users)*. Choose this option from the mouse menu and move the mouse to a starting point on the screen. Hold down a mouse button, drag the outline of the image to the desired location, and release the mouse button.

If there is no mouse available, the `[E]`, `[S]`, `[D]`, and `[X]` keys can be used to pan. These keys form a diamond on the keyboard, where `[E]` is up, `[X]` is down, `[S]` is left, and `[D]` is right. If the `[Shift]` key is held down, then the image is moved 20 pixels per keypress rather than 1 pixel per keypress.

Which Way Is Up?

GDS can also be used to rotate and mirror images. The `[/]` command *(also available in the `Edit` mouse menu)* rotates the current image 90 degrees in the clockwise direction. Use `[H]` to flip the image horizontally and `[V]` to flip the image vertically.

Chapter 8 - Slideshows

What is a Slideshow?

A slideshow is a series of successive images, each displayed for a few seconds, without user interaction.

Slideshows From the File Screen

To start a slideshow from the file screen, select the `View ``Slideshow'' of all selected` option from the `View` menu, and the slideshow will begin. Press `[Esc]` *(or double click a mouse button)* at any time to exit slideshow mode.

GDS displays all selected files during a slideshow (except when there are no selected files, in which case GDS displays all of the files). To individually select or deselect each file, press `[spacebar]` when the file cursor is over the filename.

If a mouse is being used, a range of files can be selected by holding a mouse button down at one end of a range and dragging the mouse cursor to the other end of the range. To arbitrarily modify a set of selected files, hold down the `[Shift]` key and click (or drag) the mouse over the file(s) to be selected or deselected.

Slideshows From DOS

To start an automatic slideshow from DOS, specify `/S` on the GDS command line:

```
C> GDS /S
```

The `/S` command line parameter will avoid the entire GDS user interface and return to DOS immediately when slideshow mode is exited using `[Esc]` or a double click from the mouse.

Specifying lists of files can be done from the command line by putting all file specifications on the command line. This example displays all GIF files in the current directory as a slideshow:

```
C> GDS /S *.GIF
```

The list of files to use can also come from a file, in which case the *@filename* command line parameter should be given. This example displays all files listed in the ASCII text file `slide.txt` as a slideshow:

```
C> GDS /S @slide.txt
```

At this point, one might notice that GDS normally sorts the file list before displaying anything. Sorting the file list can be prevented by specifying `/OO` *(or just `/O`)* on the command line *(for more information see Appendix B - Command Line Parameters).* This example displays all files listed in `slide.txt` in the same order they appear in `slide.txt`:

```
        C> GDS /S /O @slide.txt
```

The delay between slides is set to five seconds by default, but can easily be changed by supplying the `/Z`*milliseconds* command line parameter:

```
        C> GDS /S /O /Z8000 @slide.txt
```

This example resets the delay between slides to 8.000 seconds. One millisecond is 1/1000th of one second.

Some images are either too large or just oddly sized for the available video hardware, in this case the images need to be fitted to the screen. The `/E1` command line option will tell GDS to automatically rescale all images to fit the screen. *(Note: this option also changes the behavior of the single image viewing in GDS, even if no slideshows are being done.)*

Custom Programming

The `/X` command line parameter is designed for one purpose, and one purpose only. This option will tell GDS to exit to DOS at the end of a slideshow, leaving the last image and video mode intact. Use the `/X` option to run slideshows from batch files or custom programs.

GDS can be used to display images from custom programs or batch files by executing GDS and feeding it command line parameters which set up a single file slideshow. Using the `/X` parameter will cause GDS to exit back to your program silently, where your program can do whatever it pleases with the image on the screen. The following example is from a batch file which displays a logo at the start of an installation program *(Note: for licensing information about shipping GDS with your product for this or similar purposes, call Phase II Electronics)*:

```
...
GDS /S /Z0 /X LOGO.PCX
...
```

Chapter 9
Reduced Image Arrays

What is a Reduced Image Array?

A reduced image array is a series of reduced images arranged in a tiled format on a single screen. They provide a convenient mechanism to catalog images without the necessity or ambiguity of textual descriptions.

Selecting Files

The `Arrays of reduced images` option in the file screen's `View` menu uses all selected files to generate the arrays *(except when no files are selected, in which case GDS will use all available files).* To select a file, press [spacebar] when the file cursor is over the filename to be selected, or click a mouse button over a filename. Ranges of files can be selected with a mouse by holding down the mouse button and dragging the mouse cursor over several filenames.

With a mouse, files which are not in one continuous range in the file list can be selected by holding down the `[Shift]` key and selecting them with the mouse. When the `[Shift]` key is held down, the mouse will invert all files it is dragged over.

Setting Up the Array Screen

Once the desired files are selected, choose the graphics mode to be used from the file screen's `Res:` menu. *If a default graphics mode has not been chosen, GDS will probably use its default mode of 320x200x16, which probably is not what you want!* After the default graphics mode is set, choose the `Arrays of reduced images` option from the file screen's `View` menu.

The array setup screen consists of a rectangular window in the middle of the screen with some values in it and six buttons. Behind this window is a prototype of how the images will look when they are generated. The values indicate:

1) Number of screens which will be used to represent all of the selected images.

2) Number of selected images. This number reflects those images which were selected at the file screen.

3) Number of images which fit on each array screen.

4) Number of wasted tiles on the last array screen which will be generated.

5) Number of images across and down on each array screen.

6) Number of pixels across and down for each tile. This is not the image size, but the size of the rectangular area which is covered including any border and label which is displayed with each image.

7) Number of pixels across and down for each image. This is the exact number of pixels each image will occupy when displayed, exclusive of any borders or labels displayed with each image.

8) Percentage of original image size. This is the percentage of the screen's surface area which will be used to represent each tiled image.

There are six buttons in the array setup window:

1) Toggle label display on or off (`[L]`).

2) Toggle border display on or off (`[B]`).

3) Increase the number of tiled images across each array screen *(up arrow)*.

4) Decrease the number of tiled images across each array screen *(down arrow)*.

5) Begin generating array screens (`[Enter]`).

6) Exit without generating anything (`[Esc]`).

The best idea is to play with the controls for array generation until the screen looks appropriate. Toggling the image labels and borders can change the behavior of the array image placement and sometimes affect the number of images which will fit on the screen. This is especially true in low resolution graphics modes. It is a good idea to monitor the number of wasted tiles on the last array screen while setting up an array. If there are a lot of wasted tiles, the last screen will be mostly wasted.

Finding Colors

To start the array generation process, press `[Enter]`, or click on the button labelled `[Enter] to begin`. GDS now knows exactly how many pictures will be in each array screen, and will generate each array screen separately.

GDS first scans the files and collects all the palette information for each image. While doing this, GDS displays the colors for each image on the screen so the user knows it is doing something. The amount of time this process takes is mostly determined by the speed of the hard drive, and whether or not you have a hard disk cache loaded *(a hard disk cache is highly recommended)*. GDS then rescans the information and analyzes the information collected to come up with an idea of how much of which colors are used.

After GDS knows which colors are used in all of the images, it sets out to find the best colors to best represent all the images on one screen.

Writing Array Images

Once an array is complete, it can be manually modified with any of the color modification keys, and written with any of the file write keystroke commands. For more information on these keystrokes, refer to Appendix A - View Keys.

The mouse menus do not work when generating arrays. The easiest way to modify an array image is to write it out immediately and then view and modify it as a normal file.

Antialiasing Array Images

The `Alias:` menu in the file screen determines what kind of anti-aliasing will be performed on reduced images. Anti-aliasing is the process of eliminating jagged edges when reducing an image. There are three levels:

0) No anti-aliasing *(``Off'')*. In this mode, GDS will not attempt to anti-alias images at all. All image reduction occurs by copying individual pixels from the source image to generate the destination image. This mode is the fastest, with the poorest image quality.

1) Horizontal anti-aliasing *(``Hrz'')*. In this mode, GDS tries to find colors which match a horizontal strip of the source area in order to determine the color for each pixel of the destination image.

2) Horizontal and vertical anti-aliasing *(``Max'')*. In this mode, GDS takes the entire source image into account when generating the destination image. This mode is the slowest, but has very high quality output.

Automating the Array Process

Some users have vast uses for array images, and would like to automate the array process. GDS has a rich set of commands for BBS sysops and other professional users. For detailed information about GDS's specialized array options, see Chapter 10 - Image Centers.

Useful Command Line Options

Some useful command line parameters related to array generation are as follows (see Appendix B for complete listing):

/L*(n)*	Set default state of label button (0=off, 1=on)

/N*template*	Set template to use for output of array files *(Note: This template is in standard `C' ``printf'' format, and is intended for use by experienced programmers. If you are unfamiliar with `C', refer to a C library reference manual for more information about printf() syntax.)*
/W*(n)*	Automatically write arrays after the first file write command starting with file number *(n)*. *Note: this option allows the user to make sure the first array image is appropriate, and then write the first file and let GDS run for however long it takes to generate the remaining array screens.*

Chapter 10 - Image Centers

A Note to System Operators

GDS started a trend in the industry which is now a proven fact. Large information services and image centers from around the country have consistently reported heavy downloading of GDS's array images, as well as much heavier downloading of images which appear in GDS arrays. GDS provides system operators with a simple tool to provide a service by which users avoid the frustration of downloading files they do not want.

In the next few paragraphs, the process of automatic array generation is discussed in several steps. If you are running a system with thousands of downloadable images, please take some time to think about the array update process you will need as you accumulate new images. The structure you use and the rules you choose to follow will make an enormous difference in the amount of messing about which needs to be done to keep updated arrays.

Generating Arrays From the Command Line

GDS generates arrays for all selected files, or, if no files are selected, for all files. When arrays are automatically generated from the command line, GDS uses all specified files. To automatically generate arrays, specify the `/P`*(n)* command line option. The *(n)* value tells GDS how many images should appear across the screen. To see exactly how this will look, enter GDS normally and choose the same number of images across.

GDS uses 320x200x16 as its default graphics mode, which probably is not a good mode to use for arrays. Specify the graphics mode to be used in the arrays by using the `/G`*(h)*x*(v)*x*(c)* option. For example, to generate an array screen with five images across in 640x480x256 mode, use the following command line:

```
C> GDS /G640x480x256 /P5
```

This example automatically generates arrays for all of the graphics images in the current directory. To specify a different set of files, specify them on the command line. For very controlled lists, the @*filename* parameter may be used, where *filename* is the name of a text file containing the names of files (wildcards are ok) to use. To prevent the images from being sorted, use the `/O` parameter.

The filename label in each array image cell may be turned on or off by using the `/L`*(n)* parameter, where *(n)* is 1 for ``on'', or 0 for ``off''.

Creating an Array Logo^{PRO}

One of GDS's strongest features for system operators is the ability to display a system logo on an array screen and generate the array images around it. There are seven steps, each of which is fairly simple, but must be done carefully.

Step 1: Read *(and fully understand)* this entire section before attempting this process!

Step 2: Generate one array of images at the desired resolution with the desired number of images per screen. Write the array in a format readable by a paint program.

Step 3: Load the array image from step 2 into the paint program. Determine how many array cells are to be replaced by the logo. Determine the area of the sacrificed cells. The area should be the height and width in terms of pixels.

Step 4: Decide which cells to replace with the logo *(odd shapes are not allowed, the pattern must be square or rectangular)*. Determine the exact coordinates of the upper left-hand corner of the area which will be replaced by the logo. These coordinates must be in terms of the number of pixels from the upper left-hand corner of the screen both horizontally and vertically.

Step 5: Create the logo to be used, making sure that its horizontal and vertical dimensions do not exceed the dimensions determined in step 3. It is a good idea to make your logo a bit smaller than the literal space available by a few pixels. This ``fudge factor'' could save you a lot of time in step 6, below.

Recommendation: keep the logo simple and keep in mind that the colors used to represent the logo will usually be skewed a little because of all of the color remapping happening in the array generation. Use solid colors wherever possible and try to avoid gradients. The best logos are simple logos!

Step 6: View your new logo with GDS. While it is on the screen, crop the logo as near to the edges as possible (using `[Alt-C]` or the `Set Save Rect` menu option). Write the cropped image to disk as a `.GIF` file *(no other file types can be used as logo files)*.

Be very careful when cropping the image. If the cropped image is even one pixel larger than determined in step 3, GDS will sacrifice entire array cells to accommodate the logo.

After all of the above steps are complete, the cropped image written in step 6 can be inserted into an automatically generated array using the /P*(n)* and /Q*(x)_(y)_filename* command line parameters. The *(n)* value should be the number of cells across in the array, and the *(x)* and *(y)* parameters should be screen coordinates at which the upper-left of the cropped image is to be placed *(at this point, experimenting with the exact (x,y) placement is a good idea)*. You will probably want to create a batch file to generate arrays which may look something like this:

```
@echo off
if ``%1'' == ``'' goto help
if %1 == ? goto help
gds /P5 /Q612_404_mylogo.gif %1 %2 %3 %4 %5 %6 %7 %8
%9
goto done
:help
echo Usage: array [/Ntemplate] [/Wnumber] filespec...
:done
```

Using a batch file like this one is advised mainly to document the screen coordinates and name of the logo file so they will not be forgotten. Note: The name of the logo file in the /Q*(x)_(y)_filename* command line parameter *must* be a complete file specification, *must* be a `.GIF` file, and *must* specify the `.GIF` extension explicitly. A command line using this batch file may look like this:

```
C> array /Nmygif%s03 /W101 *.gif
```

Hints for Using Array Logos^PRO

Here are some hints about the way this automatic array generation works. First, the automatic array generation feature can be used without a logo, to automatically generate arrays. Do this by specifying a valid `.GIF` file, but specifying a very large number for the (x,y) coordinates in the /Q*(x)_(y)_filename* option (like /Q10000,10000). GDS will read the `.GIF` file, but it will not interfere with any of the array cells on the screen.

The array image palette does not take the logo image into account. If the logo image has a completely different color scheme than the images in the array itself, the logo colors will not appear correctly. It is best to use a simple logo with only a few solid colors. This way, if the colors change a bit, the end result should still look good.

The `.GIF` file specified in the /Q*(x)_(y)_filename* command line parameter is not added to the file list (if it was, it would appear as an array image). It is best to have all logo files in a separate path somewhere.

Keeping Track of Arrays

With thousands of image files, it can become very difficult to keep track of which files are in which arrays. The organization of a system's arrays can determine whether they are really useful or not. For example, it is bad in some ways to keep arrays in alphabetical order, because the system will probably receive new images which will get inserted somewhere in the grand scheme of arrays. This defeats the whole concept of arrays because users are downloading the arrays to get an overview of which files exist, and if they have to keep downloading the arrays to see if files were inserted, they will be doing a lot of extra downloading for mostly redundant information.

If arrays must be generated in periodic batches, the best way to implement this is by date of upload. This means the system operator will have to have a mechanism to keep a text file with recently uploaded files in it, or be able to get at this list somehow. Generating a stream of arrays will probably end in one array image which is not completely full, which means that the last array image will probably either be wasting some space, or have to be regenerated in the next batch.

Generating Arrays With Doors

By far, the best way to generate arrays is while the user is online, with a small program which allows the user to search for images by topic, or enter a list of files he'd like to preview. The disadvantage of this method is that each node of a system must have a graphics display capable of having the array generated on it, or one machine on the network will have to be dedicated to generating arrays for the rest of the nodes. The latter of these two methods is strongly advised if the programming resources are available.

Chapter 11 - Scanning Images

Becoming a *Scan Guru*

Scanning is much more an art than a science. The techniques of ``quality scanning'' are primarily undocumented, because those who know how rarely share their methods. Scanning skill comes with experience. GDS, like any other scanning software, has its strengths and weaknesses. Spend some time playing with the system before attempting to produce something which must be perfect.

The Scan Menu

The scan menu is at the upper right of the file screen. The first three options in this menu allow the user to select one of three modes in which to scan: monochrome, grey scale, or 24 bit color. The monochrome mode depends on the scanner's built in monochrome conversion process, and is somewhat quirky to use. The grey scale mode is quick, but suffers in quality because it provides no image enhancement.

> *NOTE:* The *monochrome* and *grey scale* scan modes are provided for ``quick and dirty'' purposes only, and are not intended to compete with mainstream desktop publishing scanning software. GDS is designed for color output, and is not set up to produce high quality desktop publishing images. However, very high quality grey scale images are possible with GDS by scanning in 24 bit color mode, and converting the resulting 256 color image to a grey scale image (reducing the color content to nothing) during the viewing process.

Selecting the fourth option in the scan menu enters the scan screen. It is very important to remember that the graphics mode used in the scan screen *has absolutely nothing to do with the resolution of any scanned images*. Choose a mode which makes the scanning user interface look good.

If GDS is unable to communicate with the scanner, it will display an error message and refuse to display the scan screen. GDS will not scan unless it can verify the existence of properly supported scanning hardware.

The Scan Screen

The left half of the screen is a page preview. Just above this area is a blue bar indicating that [spacebar] starts scanning a preview.

Within the preview area is a flashing rectangle showing the area to be scanned. You can reposition the rectangle's edges and corners by clicking just inside of the rectangle near the edge or corner to be moved and dragging the mouse around.

At the right side of the screen is a column of blue buttons which indicate the available scanning resolutions. All buttons may be selected by clicking on them. You may toggle between each of the display resolutions by clicking them with a mouse.

At the bottom of the screen is a long button which says `[Esc] to exit`. This button immediately returns the user to the file screen. Just above this exit button is a large button which says in large, friendly letters: ``` ``Scan'' ```. The scan button can also be selected by pressing the `[S]` key.

At the top center of the screen is a column of rectangles containing numbers, and arrows pointing left and right. These numbers show the current coordinates, dimensions, and preferences of the scan. These values are as follows:

`x1=###`	This is the scanner coordinate of the horizontal position of the upper left hand corner of the current scan rectangle.
`y1=###`	This is the scanner coordinate of the vertical position of the upper left hand corner of the current scan rectangle.
`x2=###`	This is the scanner coordinate of the horizontal position of the lower right hand corner of the current scan rectangle.
`y2=###`	This is the scanner coordinate of the vertical position of the lower right hand corner of the current scan rectangle.
`x=###`	This is the width of the current scan rectangle. This will be the horizontal resolution of the scanned image.
`y=###`	This is the height of the current scan rectangle. This will be the vertical resolution of the scanned image.
`Brt=#`	This is the current brightness setting of the scanner. *(The form of this option may change depending on the type of scanning device GDS is configured for. For more information about this setting, refer to the scanner reference manual.)*
`Gam=#`	This is the current gamma correction setting of the scanner. *(The form of this option may change depending on the type of scanning device GDS is configured for. For more information about this setting, refer to the scanner reference manual.)*

The scan rectangle's size can be adjusted by dragging its sides in the preview area with the mouse. For most color applications, it is best to make the scan rectangle just a bit larger than necessary, because the image can be cropped after the color conversions are done. It is better to scan a little too much of the image rather than not quite enough.

For exact adjustments, use the left and right arrows buttons of the dimension labels at the top center of the screen. Each of these buttons will move its associated value by one unit.

The aspect ratio of the scanned image is occasionally important. GDS provides a powerful feature to control the aspect ratio of the scan rectangle while it is being adjusted. If the `[Shift]` key is held down while the scan rectangle is modified directly with the mouse, GDS forces the aspect ratio of the scan rectangle to a 4:5 aspect ratio (the same ratio as the video screen). Holding down the `[Ctrl]` key instead forces the scan rectangle to a 5:4 aspect ratio, similar to that of a printed page.

Scanning an Image

Once the scan rectangle is set up and the values in the center of the scan screen look good, press `[S]`, or click on the `Scan` button to scan the image. Scanning an image is much like writing a file from the single view mode of GDS. In fact, GDS's scanned images all have the file extension ``` ``.GDS'' ``` to indicate that they are an image scanned with GDS.

Once the image is scanned, GDS will offer an opportunity to rename the file, and then quietly go back to the file screen and wait for further commands. Processing the scanned image into a supported file format is as easy as viewing it and writing it to a file.

Scanning Color With Gray Scale Scanners

GDS supports color scanning with gray scale scanners by scanning three passes. To accomplish this, you must have a red, green, and blue filter (these are available from Phase II Electronics).

GDS defaults to gray scale scanning when the configuration file specifies a gray scale scanner. To scan in color using the three filters, select the color option from the scan menu and then enter the scan screen. Whenever a preview is scanned or a scan is started, GDS will prompt the user to insert the correct filter in between the scanner surface and the image being scanned and wait for a keypress before starting the appropriate scanning pass.

It is very important to tape the photograph or transparency down so it does not move at all when the filters are being inserted or removed, or the image will not come out correctly. The alignment of each pass of the scan process is extremely important to the color quality of the scan.

Epson ES-300C Color Scanner

GDS requires that the ESC/I device driver supplied by Epson (called "EPSN.SYS") has been successfully installed in order to scan properly. By relying on this driver, GDS will be compatible with any hardware configuration Epson ever supports.

To use the ES-300C, make sure the following lines are in one of the GDS configuration files:

```
auto, /J0     ;Epson ES-300C
```

Microtek 300 and 600 Series Color Scanners

GDS requires that the Microtek MSCAN.SYS device driver is loaded successfully in order to scan properly. By relying on this driver, GDS should be compatible with future hardware implementations by Microtek.

To use the Microtek 300 and 600 series scanners, make sure that the single appropriate line below is in one of the GDS configuration files:

```
auto, /J2     ;Microtek MSF-300G (gray scale)
auto, /J4     ;Microtek MSF-300Z (24 bit color)
auto, /J5     ;Microtek MSF-600G (gray scale)
auto, /J6     ;Microtek MSF-600Z (24 bit color)
```

In addition, the MSCAN.SYS device driver requires GDS to know what the "base address" of the PCY/MCY interface card is at. All possible values for this base address are shipped as part of the GDSUSER.CFG file, and each line is commented using the semi-colon character at the beginning of the line (this tells GDS to ignore the line). To activate a certain base address, remove the semi-colon in front of the word "auto" in the line with the base address of your PCY or MCY interaface card, and make sure that no other lines with the "/A" option in it.

Microtek Scanmaker 1850 Slide Scanner

The 1850 Scanmaker behaves identically to the MSF-300Z scanner, as if it were a 8.5"x14" flatbed scanner. To use the 1850 scanner, make sure that the single appropriate line below is in one of the GDS configuration:

```
auto, /J3     ;Microtek MSF-600Z (24 bit color)
```

In addition, the MSCAN.SYS device driver requires GDS to know what the "base address" of the PCY/MCY interface card is at. All possible values for this base address are shipped as part of the GDSUSER.CFG file, and each line is commented using the semi-colon character at the beginning of the line (this tells GDS to ignore the line). To activate a certain base address, remove the semi-colon in front of the word "auto" in the line with the base address of your PCY or MCY interaface card, and make sure that no other lines with the "/A" option in it.

Jovian VIA and SVIA Image Capture Boards

To use a Jovian VIA or SVIA image capture board, make sure that the single appropriate line below is in one of the GDS configuration files:

```
        auto, /J1     ;Jovian VIA (320x240)
        auto, /J7     ;Jovian SVIA (640x480)
```

In addition, GDS must know the "base address" of the jovian interface card. All possible values for this base address are shipped as part of the GDSUSER.CFG file, and each line is commented using the semi-colon character at the beginning of the line (this tells GDS to ignore the line). To activate a certain base address, remove the semi-colon in front of the word "`auto`" in the line with the base address of your PCY or MCY interaface card, and make sure that no other lines with the "`/A`" option in it.

Sharp Scanners

As of this printing the support for Sharp scanners is not yet complete. Refer to README.TXT for information which did not get into this printing of this manual.

Chapter 12 - Processing Scanned Images

Viewing Mono and Grey Scans

First, select a desired display resolution from the `Res:` menu, and lock it with the `LOck` button. Monochrome and Grey scale scans are the least used scanning files in GDS, mainly because of the superior quality of the 24 bit scans. Viewing these files is very easy, and much like any other file format.

Viewing 24 Bit Scans

First, select a desired display resolution from the `Res:` menu, and lock it with the `AutO/LOck` button. Double click on the filename to view the image. Scanned image (`.GDS`) files are much like Targa (`.TGA`) files. GDS must convert 24 bit images from 16,777,216 colors into 256 colors, which may take some time. GDS first scans the file for its image content, churns out the best looking colors for the image, and then displays the image.

Resizing Scanned Images

Usually, scanned images are larger than the screen. To fit images to the screen, press `[Alt]+[F]`. GDS tries to fit the image to the screen in the best way it can. Depending on the exact image, this may not produce the desired results.

If `[Alt]+[F]` does not resize the image properly, press the `[spacebar]` to reset the scaling of the image to its original scale and use the `[+]` and `[-]` keys to reduce the image, and use the arrow keys to fine tune the image's exact size.

Adjusting Image Sharpness

Sharpening is the process of finding high contrast edges in a raw image and amplifying the relative intensities of the edges such that the edge becomes more pronounced. With video images, this process greatly increases the appearance of everyday scans. GDS defaults to a sharpening factor of seven (7), which works well for most images. Use the `[PgUp]` and `[PgDn]` keys to increase and decrease the amount of sharpening.

Burns and Rough Spots

24 bit color is incredibly resolute; more resolute that the eye can perceive. GDS is designed to create images which are supported by super VGA adapters, which can only display 256 colors. Although GDS does a very good job of figuring out which colors to use, it is still a computer, and is subject to judgemental error.

Sometimes, the colors GDS decides do not quite encompass the extreme limits of what is displayed in ``hot spots'' of an image, or a ``burn'' in an image. *(Note: this term comes from bright light burns in the tubes used in video cameras.)* A good example is a portrait of a person with a glare caused by the lighting on their forehead. GDS may resort to using a single color, causing a ``contoured'' look in that area which just isn't quite bright enough. This problem is similar to pixellation which occurs because of infrequent, yet important colors.

GDS decides which colors to use based on how often each color occurs. This does not work very well for some images, because the area of interest to a human viewer may be a relatively small area of the overall image.

An excellent example of this is a full length picture of a girl dressed in white, against a smoothly shaded blue, green, and grey background. The surface area of the girl's face is less than 5 % of the image, and the background covers over 95 %. To make this problem worse, there are far fewer flesh tones in the girls face than all of the shades in the background combined. The computer will casually decide that the girl's face is totally insignificant, and spend all of its wisdom making the background look great. Mathematically, the computer has made a very accurate decision. The problem is that the purpose of the image is to see the girl, not the background.

The scan is converted and the girl's face looks like a speckly pile of sawdust. This effect is called pixellation. Ideally, GDS should ignore most of the background and spend most of its effort on the girls face. GDS has two features which can completely remedy this problem.

The first feature is the ability to tell GDS to ignore an area of the image when it is figuring out which colors to use. The problem with the dominant background and girl's face could be taken care of by ignoring the entire background. Technically, this command tells GDS to scan the specified area and subtract the area's colors from the color tables, netting them out to nothing. Press `[Alt]+[f9]` to start the command, move the mouse cursor to the upper left hand corner of the area and press and hold down a mouse button. Drag the mouse cursor to the lower right corner of the area to subtract and let go of the mouse button. GDS will not do anything immedately; this is discussed in just a moment.

The second (and far more powerful) feature is the ability to tell GDS to really concentrate on a specific area of the image. Press `[Alt]+[f10]`, and use this option with a mouse, the same way the `[Alt]+[f9]` option is used. Technically, this command tells GDS to scan the specified area and treat it as if it occurs 25 times more than it actually does. Use this command with extreme care and with very small rectangles as the results are quite noticeable. If too much of the surface area of the picture is covered by these 25x rectangles, the picture can become very out of balance and difficult to change.

GDS does not recalculate immediately after using the `[Alt]+[f9]` and `[Alt]+[f10]` options. To tell GDS to recalculate after these options have been used, press `[spacebar]` and GDS will regenerate the entire image.

In experimenting with the `[Alt]+[f9]` and `[Alt]+[f10]` options, the color balance of a given image is bound to get biased to the point where further modifications seem to be rediculous. When this happens, use the `Reset to default color` command in the `16/24 bit` mouse menu to clear all of the `-1x` and `25x` rectangles.

The `[Alt]+[f9]` and `[Alt]+[f10]` options demand some practice. Experiment with some examples to become familiar with the process. After a few scans and experimentation, GDS can produce some of the highest quality 256 color conversions available.

Minimizing Color Lithography Patterns (Moray Patterns)

Scanning printed color material can be tricky. Color printing is as much of an art as color scanning because the printed image is made up of thousands of cyan, magenta, yellow, and black dots of varying sizes. These halftone patterns cause havoc with scanners, because the scanners can scan in between the dots, causing all sorts of color oscillation in the resulting image. There are several ways to eliminate these patterns.

First, never scan a printed color image when it is perfectly straight. Lithography patterns are lined up very exactly by the color separation methods, and perfectly straight scans are the worst case of interference. Rotate the image on the bed of the scanner by about 1 or 2 degrees (about 1/16th of an inch or so on one end).

Second, either scan at a very high resolution (at least 2.5 times) compared to the screen image you want to end up at, or at a resolution which is almost exactly the desired resolution. Also, remember that the resolution of the scanning screen has nothing to do with the resolution at which you are actually scanning.

Third, if the first two methods do not work satisfactorily, reduce the amount of sharpening. Sharpening sometimes magnifies the appearance of regular patterns because it interprets patterns as edges. Reducing the sharpening makes the resulting image a bit blurrier, unless you understand that it is actually a near exact representation of the scanner's original output! Most users do not realize how blurry the original image is until they see it completely unsharpened.

Chapter 13 - Controlling Palettes

What is a ``Palette''?

Popular display cards can display a tremendous number of unique colors, but only a limited number of them at once. In typical super VGA modes, only 256 of 262,144 colors can be simultaneously displayed. The palette is the set of colors which are actually displayed.

Limiting Palette Use^{PRO}

GDS provides the capability to limit the number of colors used when converting a scanned image. For software developers, this can be an invaluable resource. Simply select the maximum number of colors from the `Palette` menu in the file screen, and GDS will only use that number of colors.

When the palette is limited to 240 colors or less, GDS automatically sets up a standard EGA palette as the first 16 colors. Some popular file viewers and vertical market applications rely on these colors being set correctly for screen display.

Locking the Palette^{PRO}

GDS also has an option in the `Palette` menu to lock the palette to a specific picture. This is invaluable for producing images which need to co-exist on the screen simultaneously. Simply select the file in the file screen with the `[spacebar]` or by clicking on it with the mouse, and choose the `Lock Palette` option in the `Palette` menu. GDS reads the image, and will convert any subsequently displayed pictures to use the locked palette. To unlock the palette, choose the `Lock Palette` function again, and GDS will acknowledge that the palette is unlocked.

Be careful when locking the palette. Think about the number of colors in the selected files vs. the number of colors in the files which are to be remapped. GDS offers no protection against locking a 256 color palette and displaying 16 color images. Doing so results in a tremendously bad (and sometimes invisible) image.

Appendix A - View Keys

`[Esc]`	Exit view mode
`[Spacebar]`	Reset parameters and redraw

PAN AND SCALE

`[P]`	Pan using the mouse (mouse input required)
`[up]`	Stretch lower right corner of image up one pixel
`[left]`	Stretch lower right corner of image to the left one pixel
`[right]`	Stretch lower right corner of image to the right one pixel
`[down]`	Stretch lower right corner of image down one pixel
`[E]`	Pan image up one pixel
`[S]`	Pan image left one pixel
`[D]`	Pan image right one pixel
`[X]`	Pan image down one pixel
`[Shift]+[up]`	Stretch lower right corner of image up 20 pixels
`[Shift]+[left]`	Stretch lower right corner of image to the left 20 pixels
`[Shift]+[right]`	Stretch lower right corner of image to the right 20 pixels
`[Shift]+[down]`	Stretch lower right corner of image down 20 pixels
`[Shift]+[E]`	Pan image up 20 pixels
`[Shift]+[S]`	Pan image left 20 pixels
`[Shift]+[D]`	Pan image right 20 pixels
`[Shift]+[X]`	Pan image down 20 pixels
`[Alt]+[S]`	Center current image on the screen

WRITING IMAGES

`[Alt]+[B]`	Write BMP file (Windows 3.0)
`[Alt]+[L]`	Write LBM file (Deluxe Paint II)
`[Alt]+[P]`	Write PCX file (ZSoft / Publisher's Paintbrush)
`[Alt]+[R]`	Write RIX file (ColorRix)
`[Alt]+[W]`	Write GIF file (CompuServe GIF87a)
`[Alt]+[T]`PRO	Write TGA file (TrueVision 15 or 24 bit)PRO

IMAGE TRANSFORMATION

[+]	Redraw image approx. 5% larger (subject to rounding errors)
[-]	Redraw image approx. 5% smaller (subject to rounding errors)
[H]	Invert image horizontally (flip)
[V]	Invert image vertically (flop)
[/]	Rotate image 90 degrees (clockwise)
[Alt]+[F]	Fit image to screen
[Alt]+[C]	Crop image to write (requires mouse rectangle input)
[Alt]+[Z]	Zoom to given rectangle (requires mouse rectangle input)

PALETTE CONTROL

[f1]/[f2]	Decrease/increase red palette gamma level
[f3]/[f4]	Decrease/increase green palette gamma level
[f5]/[f6]	Decrease/increase blue palette gamma level
[f7]/[f8]	Decrease/increase palette contrast level
[f9]/[f10]	Decrease/increase palette brightness gamma level
[f11]/[f12]	Decrease/increase palette hue adjustment
[,]/[.]	Decrease/increase palette color level
[Shift]+[f1]/[f2]	Reset red palette gamma level
[Shift]+[f3]/[f4]	Reset green palette gamma level
[Shift]+[f5]/[f6]	Reset blue palette gamma level
[Shift]+[f7]/[f8]	Reset palette contrast level
[Shift]+[f9]/[f10]	Reset palette brightness gamma level
[Shift]+[f11]/[f12]	Reset hue adjustment
[Shift]+[,]/[.]	Reset palette color level
[`]/[~]	Invert palette

16 AND 24 BIT IMAGES$^{\text{PRO}}$

[Alt]+[f9]	Specify new -1x calc area (requires mouse rectangle input)
[Alt]+[f10]	Specify new 25x calc area (requires mouse rectangle input)
[PgUp]	Increase sharpening
[PgDn]	Decrease sharpening

Appendix B
Command Line Parameters

@*filename*	Take command line input from *filename* Ex: `@files.txt` ;get parameters from `files.txt`
/*name*	Assume *name* video type is present Ex: `/TSENG4` ;assume video card is a Tseng Labs 4000 series
`/512`	Assume video has at least 512K of RAM available Ex: `/512` ;assume video card has 512K RAM
`/H` or `/HELP`	Display command line help Ex: `/H` ;display command line help
`/?`	Display command line help Ex: `/?` ;display command line help
`/!`*(n)*	Set default beep 0=do not beep after image is displayed 1=beep after image is displayed Default is 1 Ex: `/!0` ;don't beep after image is displayed
`/A`*(n)*	Set default anti-aliasing level 0=no anti-aliasing 1=horizontal anti-aliasing only 2=horizontal and vertical anti-aliasing Default is 1 Ex: `/A2` ;use horizontal and vertical anti-aliasing
`/B`*(n)*	Set default mouse mode 0=boxy (full character) 1=bitmapped Default depends on detected video hardware Ex: `/B0` ;use boxy mouse
`/C`*(n)*	Set number of bits in DAC chip 0=use video BIOS 1-8=number of bits in DAC chip

	Default is 6 for register compatible VGA Ex: `/C0` ;use video BIOS for all palette access
/D*(n)*	Set default dithering level 0=no dithering 1=first level dithering (50/50 mix) 2=second level dither (25/75 mix) Default is 1 Ex: `/D1` ;use 50/50 dithering
/E*(n)*	Fit images to screen if they don't fit exactly (designed for slideshows) 0=don't automatically fit images to screen 1=fit images to screen Default is 0 Ex: `/E1` ;fit slides to screen
/F*(e)(r)(b)(s)*	Set default file display flags *(e)* should be 1 to show file extensions *(r)* should be 1 to show image resolutions *(b)* should be 1 to show # of bits per pixel *(s)* should be 1 to show file sizes Any digit which is a 0 will disable the display of the respective item. Default is `/F1001` Ex: `/F1100` ;show extension and resolution, but no bits per pixel or file size
/G*(h)*x*(v)*[x*(c)*]	Set default graphics mode *(h)* is horizontal screen resolution *(v)* is vertical screen resolution *(c)* is color resolution of screen Default is `/G320x200x16` Ex: `/G640x480x256` ;set 640x480x256 as default graphics mode
/I*(n)*	Set interlaced GIF fill mode 0=draw like other viewers 1=fill quickly and incrementally update remainder of image Default is 0. Ex: `/I0` ;draw interlaced images normally
/J*(n)*	Set scanner device type 0=Epson ES-300C color scanner 1=Jovian VIA 320x200 video capture board 2=Microtek MSF-300Z 3=Microtek Scanmaker 1850

	4=Microtek MSF-300G 5=Microtek MSF-600Z 6=Microtek MSF-600G 7=Jovian SVIA 640x480 video board Default is 0. Ex: `/J4` ;use MSF-300G NOTE: For the most recent scanner information, see README.TXT.
/K*(n)*	Set default auto comment display flag 0=do not automatically display GIF comment records after viewing 1=automatically display GIF comment records after viewing GIF Default is 1. Ex: `/K0` ;don't automatically display GIF comments
/L*(n)*	Set array filename labels on or off 0=do not display any labels below each array image 1=display filename labels beneath each array image Default is 1. Ex: `/L0` ;don't display labels in arrays
/M*(n)*	Set number of colors to use in color conversions/ reductions *(n)* number of colors (2 <= *(n)* <= 256) Default is 256. Ex: `/M192` ;use a maximum of 192 colors
/N*template*	Set default filename template to use writing files *(printf format)* Default is ``GDS%03d''. Ex: `/NTEST%04d`

`/O`*(n)*	Set slideshow sort flag 0=don't sort file list 1=sort file list Default is 1. Ex: `/O0` ;don't sort file list
`/P`*(n)*	Automatically generate arrays, and specify how many array cells across *(n)* number of cells across to generate Default is 0. Ex: `/P6` ;automatically generate arrays 6 cells across
`/Q`*(x)*_*(y)*_*(n)*	Set position and name of array logo file *(x)* horizontal position at which to put the backdrop image *(y)* vertical position at which to put the backdrop image *(n)* [drive:][\path\]filename.GIF of file to use as the backdrop Default is OFF (no logo). Ex: `/Q540_12_c:\logo\mylogo.gif` ;set up array backdrop at (540,12)
`/R`*(n)*	Set default 'lock' video mode state 0=don't lock video mode 1=lock selected video mode Default is 0. Ex: `/R1` ;lock default view mode
`/S`	Set slideshow mode Default is OFF (no automatic slideshow) Ex: `/S` ;do automatic slideshow
`/T`*(h)*x*(v)*	Set default text mode *(h)* number of columns *(v)* number of rows Default is 80x25. Ex: `/T132x44` ;use 132x44 text mode
`/U`*(n)*	Set default array border toggle 0=do not display borders in array images 1=display borders in array images Default is 1. Ex: `/U0` ;do not display borders
`/V`*(n)*	Set orientation of file display

	0=horizontal scrolling 1=vertical scrolling Default is 0. Ex: `/V1` ;set vertical scrolling orientation
`/W`*(n)*	Automatically write array runs after the first write command (n) file number for first file written Default is 0. Ex: `/W104` ;set write file number to 104
`/X`	Automatically exit to DOS without resetting video to text mode
`/Y`*(p)(g)*	Set image preprocessing gamma correction factor (for scanned images only) *(p)* is one of the following parameters: `R'=red `G'=green `B'=blue `A'=all (red, green, and blue) *(g)* is gamma correction factor (-127 to 127) Defaults for all gamma correction factors is 0. Ex: `/Yg-112` ;set green gamma to -112
`/Z`*(n)*	Set slideshow image delay to given milliseconds (accurate only to 1/18 second) *(n)* is number of milliseconds (1000ths of seconds) between images Default is 5000 (5 seconds). Ex: `/Z2400` ;set delay to 2.400 seconds
`/=`*(p)val*	Set default palette level (for scanned images only) *(p)* is one of the following parameters: `R'=red level - *val* is from -255 to 255 `G'=green level - *val* is from -255 to 255 `B'=blue level - *val* is from -255 to 255 `C'=contrast level - *val* is from -255 to 255 `+'=brightness level - *val* is from -255 to 255 `L'=color level - *val* is from -255 to 255 `S'=sharpening level - *val* is from 0 to 50 Defaults for all palette levels are 0, except `S', which is 7. Ex: `/=C40` ;add 40 to color level

Appendix C - Configuration Files

Configuration Files Defined

`GDS.CFG`, `GDSUSER.CFG` and `GDSLOCAL.CFG`^PRO^ are ASCII text files which are read when GDS is executed. `GDS.CFG` contains definitions for all video modes matching each display card, except modes for intelligent graphics drivers like TIGA. All GDS configuration files can contain command line parameters which are conveniently parsed at runtime.

Configuration Read Order

All configuration files are read from the current directory first, and then from the execution path. `GDS.CFG` is the only configuration file which is required for execution because it contains all video mode definitions. GDS reads `GDS.CFG` first, then `GDSUSER.CFG`, and finally `GDSLOCAL.CFG`^{PRO}.

The thought process behind the three different configuration files is simple but powerful. For simple systems, there is no need for `GDSLOCAL.CFG`^{PRO}, and sometimes `GDSUSER.CFG` can even be omitted. For more intricate systems, it is useful to have different defaults for each node on a network. For these systems, the `GDSUSER.CFG` file can reside on the local nodes, without interfering with updating `GDS.CFG`.

`GDSLOCAL.CFG`^{PRO} is used primarily when a set of defaults is desired for specific directories. An example is when certain types of images are viewed and the desired options are significantly different than for general viewing purposes. Bulletin board system operators use `GDSLOCAL.CFG`^{PRO} in directories where they generate their arrays.

Comments ; This is a comment!

Any semicolon (`;`) in a configuration file is used to flag the remainder of the line it appears in as a comment. GDS will not pay any attention to anything on any configuration file line after a semicolon.

Supported Video Modes

`GDS.CFG` defines all video modes except those detected through intelligent software drivers. The format of the video mode definitions in `GDS.CFG` is as follows:

```
A, B, C, D, E, F, G, H, I, J       ;optional comment
```

A) Name of the video card
B) Horizontal screen resolution (number of units across)
C) Vertical screen resolution (number of units high)

D) Number of bits per pixel (or 0 for text mode)
E) 8086 AX register on INT 21h call to set video mode (see I)
F) 8086 BX register on INT 21h call to set video mode (see I)
G) 8086 CX register on INT 21h call to set video mode (see I)
H) 8086 DX register on INT 21h call to set video mode (see I)
I) This option has one of three meanings:
    1) 0 if video mode is a standard graphics mode
    2) 1 if video mode is directly programmed tweeked mode *(VGA register compatible cards only!)*
    3) The base address of the screen if the video mode is a text mode (0 bits per pixel). This value is almost always 0xB800.
J) Dot Mode (pixel format)
    0) Standard EGA or VGA 16 or 256 color mode pixel mapping
    1) Chunky 16 color mode (rare modes on some SVGA cards)
    2) Planar 256 color mode (used for *tweeked* VGA modes)
    3) TIGA modes (automatically detected, no use in configuration files)
    4) *Reserved for future use*
    5) Sierra Semiconductor Hi-Color 32,768 color DAC modes

Video modes can easily be disabled (if they do not work with your card or monitor). Insert a semicolon to *comment the line out*:

```
        ;the entire following line is now a comment:
        ;TSENG4, 1024,  768,   8,    0x38,  0,     0,     0,     0,
0
```

If the information in `GDS.CFG` does not match your card and you are familiar with the above terminology, you may modify an existing video type and use it. Any modifications to `GDS.CFG` are not supported.

Automatic Command Line Parameters

GDS can be customized to use an exact set of defaults. This is done by inserting *automatic command line parameters* into the configuration files. GDS reads these parameters at startup and treats them just as if they had been entered on the GDS command line from the DOS prompt.

To set up an automatic command line option, add a line to `GDS.CFG` similar to the following example, except with whatever command line options you want. This example shows options which set the default antialiasing level and extended text mode:

```
        auto, /a2 /t132x44   ;full antialiasing & use 132x44 text
```

All automatic command line parameters are processed *after* actual command line parameters. If there is an automatic command line parameter in a configuration file, it will take precedence over the same option typed on the DOS command line.

There are examples of automatic command line parameters included at the bottom of `GDS.CFG`.

Appendix D - Video Hardware

Supported Hardware

This list is accurate as of the printing of this manual. Please refer to the file README.TXT for more updated information included with your copy of GDS.

GDS automatically detects TIGA and supports all available 4, 8, 16, and 32 bit TIGA modes.

GDS automatically detects Sierra Semiconductor "Hi-Color" DAC chips and supports all known or detected 32,768 color video modes. These "Hi-Color" modes are usually available only on VGA adapters using the Tseng 4000 VGA chipset.

The following is a list of command line parameters and supported modes for use with each GDS video mode *(Note: some modes may not exist depending on adapter variations, or may not be functional depending on the adapter's configuration and amount of installed video memory)*:

/EGA	Standard EGA Adapters (software and screen format compatibles) 320x200x16, 640x200x16, 640x350x16
/VGA	Standard VGA Adapters (software and screen format compatibles) 640x480x16, 320x200x8 ``Tweeked'' VGA Modes (supported *only* by 100% CRTC register compatibles) 320x240x256, 320x400x256, 360x480x256, 704x528x16, 720x540x16, 736x552x16, 752x564x16, 768x576x16, 784x588x16, 800x600x16, 640x400x256 *Note: The above ``tweeked'' modes are normally disabled in the GDS.CFG file, and must be enabled before use by omitting the semicolon (``;'') before the mode definition. For more information about commented lines in configuration files, see Appendix C - Configuration Files.*
/AHEAD	Ahead Systems Series A Chipset 640x400x256, 640x480x256, 800x600x256
/AHEADB	Ahead Systems V-5000B Chipset (Wizard VGA) 800x600x16, 1024x768x16, 640x400x256, 640x480x256, 800x600x256, 1024x768x256

/ATI	ATI Technologies VGA Wonder Series Adapters 800x600x16, 1024x768x16, 640x400x256, 640x480x256, 800x600x256, 640x480x32K, 800x600x32K
/CHIPS	Chips and Technologies SVGA Chipset Adapters 800x600x16, 1024x768x16, 640x400x256, 640x480x256, 768x576x256, 800x600x256
/CIRRUS	Cirrus Logic SVGA Chipset Adapters 720x540x16, 800x600x16, 640x400x256, 512x480x256
/EVEREX	Everex Systems VGA & SVGA Adapters 800x600x16, 640x350x256, 640x400x256, 512x480x256, 640x480x256, 800x600x256
/EV634	Everex Systems Premium Viewpoint VGA 800x600x16, 1024x768x16, 1280x1024x16, 1664x1200x16, 640x400x256, 512x480x256, 640x480x256, 800x600x256, 1024x768x256, 320x200x32K, 512x480x32K, 640x480x32K, 800x600x32K
/GENOA	Genoa 6000 Series Chipset Adapters 800x600x16, 1024x768x16, 640x400x256, 640x480x256, 800x600x256
/OAK	Oak Technologies VGA Adapters 640x480x256, 800x600x256
/ORCHID	Pro-Designer Series Adapters 640x350x256, 640x480x256, 800x600x256
/PARA	Paradise VGA Adapters 800x600x16, 1024x768x16, 640x400x256, 640x480x256, 800x600x256
/TRIDNT	Trident TVGA, ATI Prism Elite, Everex Viewpoint VGA 800x600x16, 1024x768x16, 640x400x256, 640x480x256, 800x600x256, 1024x768x256
/TSENG	Tseng Laboratories ET3000 Series Chipsets (STB VGA EM-16) 800x600x16, 1024x768x16, 640x350x256, 640x480x256, 720x512x256, 800x600x256
/TSENG4	Tseng Laboratories ET4000 Series Chipsets 800x600x16, 1024x768x16, 640x350x256, 640x400x256, 640x480x256, 800x600x256, 1024x768x256, 320x200x32K, 640x350x32K, 640x480x32K, 800x600x32K
/VESA	VESA Compliant Adapters 800x600x16, 1024x768x16, 1280x1024x16, 640x400x256, 640x480x256, 800x600x256, 1024x768x256, 1280x1024x256

`/VID7`	Headland Tech./Video 7 VEGA Deluxe, 1024i, and V-RAM 720x540x16, 752x410x16, 800x600x16, 1024x768x16, 640x400x256, 640x480x256, 720x540x256, 800x600x256
`/ZYMOS`	ZyMOS Poach 51 SVGA, TrueTech HiRes VGA Adapters 720x540x16, 800x600x16, 960x720x16, 1024x768x16, 1280x640x16, 512x512x256, 640x400x256, 640x480x256, 720x540x256, 800x600x256

Appendix E - Common Problems

The following *problem* and *solution* pairs are included to help you diagnose problems with your configuration.

Problem: *After GDS starts, it keeps doing something with the disk drive which makes me paranoid! I don't like it and I want it to stop!*

Solution: This inquisitive behavior is perfectly normal for GDS. Don't worry, it's not a virus! Whenever you are not actually doing something, GDS reads the number of bits per pixel and screen resolution for every file in the file list. It reads a few listings and then pauses for a couple of seconds and repeats this pattern until it has read every file at least once. GDS does this to minimize the delay when an option is chosen which requires all of the information about a file (like the number of bits per pixel or image resolution). If you do anything with the user interface or hit any keys, GDS will stop reading these files and perform the requested action immediately.

Problem: *Some pictures go totally nuts and draw lines all over the screen. With some pictures, the screen skews horizontally and looks like the monitor is not working properly.*

Solution: Look at the resolution of the file; it may exceed the resolution of your monitor. First set the resolution to the maximum that your monitor can handle, then set the AutO button to the LOck state, and then try viewing the image again. To customize GDS so you do not have to lock the video mode on every run, remove the offending video modes in GDS.CFG by inserting a semicolon (``;'') at the beginning of the line describing the video mode. It's a good idea to go through each mode in the Res: menu, write down which modes do not work with your system, and then edit GDS.CFG to omit all of the offending modes.

Problem: *The file cursor flashes on and off very fast on some files and GDS will not display them. GDS displays the horizontal resolution of the file at the bottom of the screen as −1.*

Solution: This happens when GDS believes there is an error in the file. If you don't believe there's an error in the header of the file, try displaying the file with another viewer. Let us know if you find a file that GDS will not display.

Problem: *GDS won't run, and gives me an error that indicates that it doesn't know what kind of video card is present.*

Solution: If you are sure you have a video card which is compatible with the information in Appendix D, use the */name* option to tell GDS which card to support. You may also have to use the /512 option if you have 512K of video RAM and GDS is unable to detect it. If you do not know what kind of video card you have and it doesn't seem to work, then the card may be one which is incompatible with GDS. If you have an unsupported card and would like it supported, send the technical reference information with a brief cover letter, and we'll see what we can do.

Problem: *GDS displays 16 color images and the top of 256-color images, but the bottom part of 256 color images is either black, white, or garbled. 1024x768x16 images look O.K. for the top third, but the very bottom wraps to the top of the screen.*

Solution: A) Try locking each extended screen mode using the `Auto/Lock` button and various selections in the `Res:` menu. See which modes work and which ones do not.

B) Check to see if there is enough RAM on your video card to support the display mode you are trying to use. If not, you may disable the offending mode using a semicolon ("`;`") in `GDS.CFG`. *For more information on the use of the semicolon, refer to Appendix C - Configuration Files.*

C) Look in `GDS.CFG` to see if the screen modes which do not behave appropriately are actually supported by your video card and not by a different video card. You may have to experiment with `GDS.CFG` to get a reliable list of modes to use.

Problem: *Some pictures I have are squished toward the left or top of the screen when I view them with GDS.*

Solution: Depending on the graphics mode that the image was stored in and the different graphics modes GDS supports for your video board, the aspect ratio of images may be incorrect. GDS will not modify the dimensions of a picture unless the picture is initially *too large* to fit on the largest mode available *(in which case, GDS will scale the image down to fit into the largest screen mode).* The squished images had probably been written from a screen size which had a much greater horizontal aspect ratio than the display mode GDS is using to view them. Most of the time, you can simply hit `[Alt]+[F]` to fit the image into the screen. Sometimes even `[Alt]+[F]` does not work because users store the images squished into screen sizes which do not match the original image. When `[Alt]+[F]` doesn't work, try using the arrow keys (the `[Shift]` key makes the arrows more powerful). To actually *repair* these images, manipulate each image separately until it looks good in whatever screen resolution you like (LOck the display resolution with the `Res:` menu). Write each image to a new file using `[Alt]+[W]`, or any other keystroke used to write files as described in Appendix A - View Keys.

Problem: *I see garbage on the text screen around the mouse pointer whenever I move the mouse around.*

Solution: The VGA card is probably not 100% compliant with the VGA specification, or is operating in a display mode which is an extension to the VGA standard and therefore not specified to operate as a compatible mode. Don't worry, there may be nothing wrong with your video card. You may click the MOUSE: button in the file screen to get rid of the problem temporarily, or *(better yet)* change GDS.CFG and add a line which reads ``auto, /B0''. This will force the mouse to default to a character, rather than an arrow in text mode.

Many SVGA boards in extended text modes don't adhere to the same character set mapping scheme used by standard VGA 80x25 text mode. Ahead Systems, Headland Technologies, Hercules, Trident, Everex, and Genoa VGA cards seem to work fine without glitching in extended text modes, while many other SVGA cards display garbage around the cursor. ATI VGA Wonder cards used to have problems with extended text mapping garbage, but GDS versions later than 1.09 correct the problem by reading the screen over and over again until the garbage goes away (ATI has acknowledged this as a hardware bug which either will be or has been corrected in their newer VGA cards).

Problem: *I can display images, but the colors are messed up, and seem to be erratic. Colors are just messed up in general.*

Solution: The number of bits in your palette DAC is probably wrong. GDS defaults to /C6 for 18 bit DACs (6 bits per color bar). Try using the /C0 option to force GDS to use the video BIOS. If you are an experienced user and know you have a video board with a 24 bit DAC chip in it, try the /C8 option (that gives you 24 bit color resolution, which makes more of a difference than one would easily believe).

Problem: *Images are about four times dimmer than they should be.*

Solution: You may be lucky enough to have 24 bit DAC hardware. Try using /C8 on the command line (or in the configuration file). If that doesn't work, then the DAC is probably not VGA register compatible, and you'll have to use /C0 to force GDS to use the BIOS.

Problem: *The colors that GDS is picking for arrays are not very good and are sometimes erratic.*

Solution: First, select the screen resolution you want to generate the array in. GDS defaults to 320x200x16, which is a terrible screen mode for arrays. Usually, users generate arrays with 640x480x256 because it is a screen format which is viewable by most VGA hardware.

If problems with the colors persist, you probably do not have enough RAM. On machines with less than 450K free, GDS may have trouble dealing with memory. Although a great deal of effort has gone into making GDS very efficient, GDS is still a memory intensive program. As a rule, graphics processing takes a lot of memory. You may find the amount of free memory you have by using the DOS CHKDSK program. If CHKDSK reports less than 400K available at the DOS prompt, GDS may not have enough work space. You may be able to help GDS by providing at least 64K of EMS using a device driver like ``QEMM'' by Quarterdeck Office Systems or ``386MAX'' by Qualitas. EMS makes an amazing difference in the number of array colors GDS has to work with.

Appendix F - File Formats

File Formats

BBM	Supports BBM (Deluxe Paint II brush) files as specified by Electronic Arts. Any IFF extensions are allowed, but ignored.
BMP	Supports Microsoft Windows uncompressed BMP file format for 8, 16 and 256 color images.
GIF	Supports GIF89a and all prior GIF file formats as specified by CompuServe.
LBM	Supports LBM (Deluxe Paint II) files as specified by Electronic Arts. Any IFF extensions are allowed, but ignored.
MAC	Reads monochrome MAC files originating from the Macintosh. These files are rare these days, and are commonly referred to as ``read-mac's''.
PCX	Supports version 2.0 and higher PCX files as specified by ZSoft. Automatically detects improper headers and makes intelligent guesses as to the image format based on palette content, extended palette presence, and image data length.
RIX	Supports uncompressed RIX files as specified by RIX Software. RIX has chosen not to release the file format for their compressed files. Also, the RIX file specification makes no provisions for some screen resolutions. GDS writes odd screen sizes with a `?' as the last character of the file extension.
TGA	Supports uncompressed 16 and 24 bit TGA files. All TGA files written with GDS are written using the 24 bit format, unless the current video format has 15 or 16 bits, in which case, GDS uses the 16 bit TGA format. When reading TGA files, GDS automatically uses Floyd/Steinberg color distribution and edge sharpening to enhance the image quality.

Color Reduction Resolution

The color reduction algorithm in GDS performs a three dimensional search for colors using five bits of precision for each color axis. This results in a relative color accuracy of 32,768 colors; the same as a 16 bit TrueVision Targa card.

GDS uses two techniques to approximate colors. The first method is symmetrical dithering (two by two pixel array), which uses two colors to form the appearance of a third and non-existant color. The second method is an optimized version of the Floyd/Steinberg color distribution algorithm, and mixes colors together based on the relative errors in coloration of surrounding pixels. The Floyd/Steinberg algorithm and various derivatives are the most widely accepted algorithms for color distribution available, and are responsible for the appearance of most scanned GIF images.

Appendix G - Glossary

anti-aliasing	The reduction of jagged edges and image artifacts introduced when digital images are rescaled. In terms of how GDS uses this, anti-aliasing is the process of combining and processing colors to make reduced images look better.
array images	Single graphics files containing many reduced images for the purposes of cataloging the images with one file.
batch file	A file containing commands which are interpreted by `COMMAND.COM`, running under PC-DOS or MS-DOS. Batch files act like executable files and are very useful for simplifying complicated and/or redundant tasks.
chunky	A term used to describe a method of storing pixels in video memory where each pixel occupies a certain number of bits in a given byte or range of bytes. Typically, 16 color modes on PCs are *planar* rather than *chunky*. Most 256 color modes on SVGA cards are *chunky* because each pixel is 8 bits, which are stored as one byte for each pixel.
CRT	Cathode Ray Tube. For example, a video display is a CRT with three guns; one each for red, green, and blue.
dithering	The placement of different colors or dot patterns in order to simulate the presence of a color or shade which is not available in the current set of colors. GDS uses dithering to simulate colors which do not exist in a given image's color palette.
dpi	An acronym for *dots per inch*. Commonly used when referring to the resolution of image scanners and printers.
gamma correction	The adjustment of red, green, and blue brightness levels in order to correct for differences in input and output devices such as scanners and video displays. The phosphors on a CRT, for example, do not respond with a proportional amount of light for a given amount of current. Gamma correction is usually done with a log curve.
LUT	LookUp Table. Another term for ``color palette''.
palette	A set of colors used in a digital image. On common PC class video displays, a color palette (or LUT) is used in place of actual color data in order to save display memory. Super VGAs currently use a palette of 16 to 256 colors, each palette entry is capable of displaying any one of 262,144 total colors.

	Some Super VGA cards are emerging with capability to escape the constraints of palettes and display more than 32,000 colors simultaneously.
panning	Term used to describe moving or sliding an image from one position to another. In Filmmaking, panning is used to scan a scene from side to side in order to show a transition or more complete image of the scene.
path	Term used to define the set of directories which dictate a specific drive and/or directory or sub-directory in a hierarchical mass-storage file system.
PATH=	Statement used by DOS to indicate which paths should be searched in order to locate a program which has been requested for execution. Typically, this is a list of directories which contain common applications and utilities.
pel	A single dot in a digital image. Originally slang, this term grew out of the casual verbal abbreviation of ``picture element''.
pixel	A single dot in a digital image. Originally slang, this term grew out of the casual verbal abbreviation of ``picture cell''.
pixellation	The patterns generated when a computer program tries to approximate a color which cannot be accurately represented by the available colors, and individual pixels can easily be seen. This term has a bad connotation, and usually refers to obvious artifacts introduced by lack of color resolution.
bitplane	A monochrome bitmap *(one bit per pixel)*. When the term *bitplane* is used, it usually refers to *one of many* bitplanes. Most 16 color VGA modes use four *bitplanes* to represent the entire image, because each pixel needs four bits to achieve 16 colors.
planar	A term used to describe a method of storing pixels in video memory where each bit of a pixel is stored in a separate monochrome bitmap. These monochrome bitmaps are combined to produce screen modes with multiple bits per pixel. Most 16 color VGA modes are *planar*.
rax	A small, friendly and very intense creature which floats around and makes mischief with human females and digital processors. Rarely allowing itself to be seen, it leaves only a trail of graphic residue to indicate its presence.
runtime	The time at which a program is run. This term is usually used to describe conditions which exist or are created when a

program is run, rather than before or after the program is run. For example, a menu option in a program is a ``runtime option'', while a command line option is not.

saturation	A term used to describe how much color is contained in a given color index. More saturation gives a more vibrant color.
SVGA	``Super VGA''. A video display adapter which has proprietary hardware and/or software extensions enabling it to do more than a standard VGA adapter.
tweek	A non-standard modification made to something to make it a little bit better. For the purposes of this text, *tweeked modes* are those which have been modified a bit to force the given display adapter to support a mode which the manufacturer does not support. An example of a *tweeked mode* is the 320x400x256 color mode. This mode is achieved by setting 320x200x256, and then reprogramming some of the display adapter's control registers to change the PC's memory interface and display timing. This process doubles the amount of information displayable on the screen, and will work with every 100% compatible VGA, even an IBM VGA.

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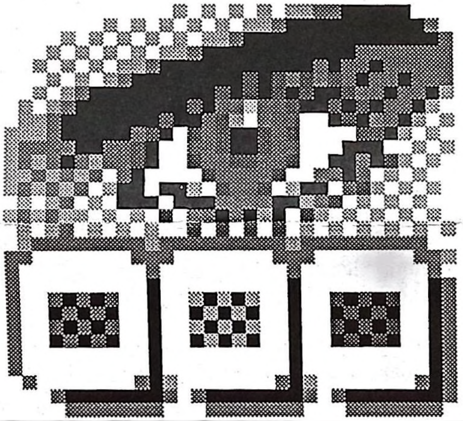

Graphics Display System Documentation

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NOTE: MAKE SURE YOU FIND THE "VIEW MODE MENUS!" See "Viewing Pictures" below.

Minimum System Requirements

- IBM PC or 100% compatible
- Hercules Mono, CGA, EGA, VGA, SVGA, or TIGA display
- MS-DOS 3.1 or higher
- Hard disk drive with 2+ megabytes free
- Standard mouse w/DOS driver

Installation

To install GDS, create a directory on your hard disk drive called "GDS." Next, copy the files from the GDS distribution disk to your hard disk in the "GDS" directory. GDS is now ready to configure for your system.

Configuration

After GDS has been installed, it is ready to run. You can run GDS by typing "GDS" at the DOS command line while you are logged into the "GDS" directory. You may also put the "GDS" directory into your "PATH=" statement in the AUTOEXEC.BAT file so you can run GDS even though you are not logged to the GDS directory.

The first time GDS is run, there is no configuration information available. GDS guides you through the video configuration process. After being run, there may be a slight delay as GDS determines your system configuration.

The first screen to appear contains some helpful information and instructions to follow. You can press the [Enter] key to continue into the video mode configuration.

For each video mode, GDS needs you to tell it if the mode is OK to use. GDS can test the mode for you in graphics, or you can skip the test if you know it will cause problems with your system.

Normally, you can type [Enter] at this first text prompt to start viewing graphics modes and approving or removing them. ***If the screen goes crazy during the test, HIT THE [Enter] KEY ONCE and wait for up to 10 seconds before turning off your monitor.*** There are circumstances where the video hardware may lock up your machine, which can hurt your monitor. Raxsoft Incorporated assumes no liability for video hardware which has been damaged by misuse. Make sure you hit [Enter] and turn off the monitor if the screen doesn't return to normal within 10 seconds.

GDS draws a test pattern in each graphics mode that shows how GDS perceives the mode. If this test pattern looks OK, approve the mode by typing 'Y'. If the test pattern looks skewed or scrunched up at the top of the screen, then remove the mode by typing 'N'.

After typing 'Y' or 'N', GDS will continue immediately to the next mode to be tested.

Once GDS has completed the tests, it gives you the opportunity to save the configuration. The configuration information is saved in a file called "CONFIG", which is located in the same directory as the GDS.EXE file. Deleting the CONFIG file will force GDS to completely reconfigure itself the next time GDS is run.

If you change video hardware, it is a good idea to delete CONFIG and let GDS guide you through complete reconfiguration.

The File List

When GDS comes up, it displays all of the files it "knows about" in a columnar directory list. The columns start at the left and scroll to the right. You can use the arrow keys to move easily through the file list. You can navigate this list very easily by moving the mouse pointer into the left and right edges of the screen. The file list scrolls in the opposite direction, effectively giving you a huge "workspace" of file columns.

At the top (and very bottom) of the screen, there are various menus which you can use to perform many useful functions. The most commonly used items are in the menus at the top of the screen, and the more esoteric options are in the menus at the bottom.

Below the columns of files, there is a status line which displays pertinent information about the current selection.

You can select files by clicking on them using the mouse pointer. You can hold down the mouse button and drag the mouse around to select huge ranges of files. You can arbitrarily select and deselect files by holding down the keyboard [Shift] key and using the mouse. When the [Shift] key is held, the selection of the mouse inverts the selection state of any files it interacts with. This allows you to add and remove files from the selected set very quickly and easily.

The keyboard [Spacebar] key also inverts the selection state of the current file.

To view a file, just double click on it (or hit [Enter]). To start a slide show, just click once in the box to the lower right of the file list. You can also start a slide show by choosing the "Slide show" option in the "View" menu.

If you double click on a directory or disk drive listing, GDS will immediately log to that directory or drive, find all of the graphics files there and redo the file display.

There are many useful functions in the "File" menu, which are fairly obvious. To exit GDS, you can use the "Exit" option in the "File" menu, or just hit [Esc].

The "Search All Subdirs" option in the "File" menu is especially powerful. This option starts at the currently logged directory and searches every directory below it, as well as the directory itself. You can find all of the graphics files on your hard drive by using this option while logged to the root directory (keep double clicking on "<..>" until there is no parent directory).

The "Print Portrait" and "Print Landscape" options in the "File" menu are very handy, and can be used to print files in batches. Just select all of the files to print and choose this option. If no files are selected, the current highlighted file will be printed.

NOTE: Make sure GDS is set up for the correct printer port. You can specify the DOS filename for the printer port by using the /#<name> command line parameter. The default is "PRN". If your PCL printer is on a different port, modify the GDSUSER.CFG file using DOS EDIT and change the first line in the configuration file. For example, if your printer is on LPT3:, then change the GDSUSER.CFG file to read as follows:

```
------------start of file-----------
auto,/#LPT3:
------------end of file-----------
```

For more information about the configuration files, see "Configuration Files" below.

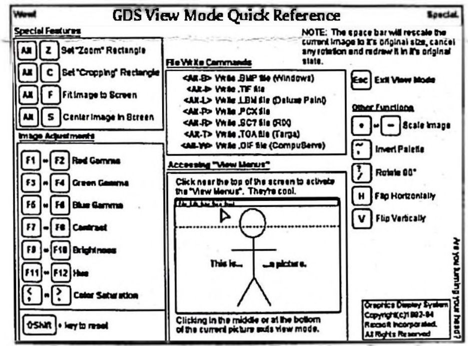
Viewing Pictures

To view a picture, just double click on the file entry in the file list. Normally, GDS will automatically choose the best display resolution and show the picture. You can also lock the display resolution by using the "Auto Resolution" button at the bottom of the file list screen.

Sometimes, GDS has to jump through some incredible technical hoops to get you the best looking picture. For example, if you have a 24 bit .TGA file which you want to look at, but only have a video system capable of displaying 256 colors, GDS is going to do some heavy thinking before it shows the picture. This process can take as much as a minute for large files, but should be less than

20 seconds on most machines. The result is a beautifully rendered picture on a 256 color display. Try doing that with your other viewers!

When the video mode is locked, only the current mode (as seen in the "Res:..." menu at the lower left of the screen) is used. Forced display resolutions may cause GDS to go to some great lengths to show you a picture. Also, not a lot of time has been spent on showing high quality monochrome pictures on the fly. For the best results, convert pictures to monochrome using the "Convert" menu.



NOTE: The space bar will rescale the current image to it's original size, cancel any rotation and redraw it in it's original state.

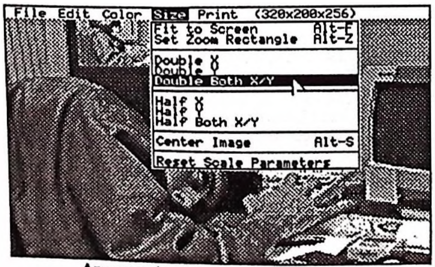
Click near the top of the screen to activate the "View Menus". They're cool.

Clicking in the middle or at the bottom of the current picture exits view mode.

VIEWHELP.GIF • Print this file and keep it nearby.

When a picture is on the screen, there are many functions to help you process the picture. Make sure to view the file VIEWHELP.GIF, which comes with GDS. This file contains a map of all of the keystrokes which you can use to process images. If you have a 300 dpi PCL printer, print VIEWHELP.GIF and keep it handy.

The "View Mode Menus" may be difficult to find unless you're looking for them. While a picture is being viewed, move the mouse pointer to the top of the screen and hold down a mouse button. A set of menus will appear which allow you to do all sorts of things.



An example of the view mode menus.

Some of the menu options have keyboard equivalents, which are displayed at the right of each option in the menu.

To exit view mode, you can hit [Esc], [Enter], or click the mouse button *(except in the top area of the screen because of the menus!)*

The following list is a list of keyboard commands which can be used while a picture is displayed:

<Esc>	Exit view mode. A mouse click will also exit if the image being viewed is not a GDS catalog GIF and is 8 (or fewer) bit.
<Space>	Resets all scaling and orientation settings and redraws image.
<Alt-B>	Write .BMP file (Windows Bitmap).
<Alt-I>	Write .TIF file (Tagged Image File Format).
<Alt-L>	Write .LBM file (Deluxe Paint II).
<Alt-P>	Write .PCX file (PC Paintbrush).
<Alt-R>	Write .SCx file (ColorRIX).
<Alt-T>	Write .TGA file (Targa).
<Alt-W>	Write .GIF file (CompuServe GIF89a).
F1/F2	Red level. *Use <Shift> to reset.*
F3/F4	Green level. *Use <Shift> to reset.*
F5/F6	Blue level. *Use <Shift> to reset.*
F7/F8	Contrast. *Use <Shift> to reset.*
F9/F10	Brightness. *Use <Shift> to reset.*
F11/F12	Hue. *Use <Shift> to reset.*
';' / ':'	Color level. *Use <Shift> to reset.*
slash '/'	Rotate 90ø clockwise. (Forward slash).
tilde '~'	Invert palette (8 bit mode or lower).
'H'	Flip image horizontally (left to right).
'V'	Flip image vertically (top to bottom).
'P'	Pan image with mouse.
plus '+'	Scale image up 5%% larger
minus '-'	Scale image down 5%% smaller
<Alt-F>	Fit image to screen.
<Alt-S>	Center current image.
<Alt-C>	Set "crop" rectangle. Click and drag a rectangle. When you save a screen image, this is the rectangle that gets saved.
<Alt-Z>	Set "zoom" rectangle. Click and drag a rectangle to zoom into. When you release the button, GDS zooms.
<arrow keys>	Use the arrows to move the lower right corner of the image around. Hold down the shift key to move 20 pixels rather than one each.
E,S,D,X	These keys pan the image up, down, left, and right. If the <Shift> key is held, then they pan the image 20 pixels rather than one.
<PgUp>	Increase sharpening (available with 15 bit images or better)
<PgDn>	Decrease sharpening

You can also display pictures in a slide show, which is described in the "Slide Shows" section below.

Converting Pictures

GDS makes converting pictures easy. To convert a picture, select the picture and choose the destination format from the "Convert" menu. GDS does the rest. When GDS is done, it gives you the opportunity to rename the resulting file.

If you select more than one file, then GDS will do a "batch" conversion. You will not be given the opportunity to rename the files, but GDS will studiously go through each file and convert it into the destination format.

Remember that GDS tries to write files with the same filename, but with a different extension, and if that is impossible, GDS resorts to writing the file out using a numbered filename like "`GDS000.GIF`".

Slide Shows

To start a slide show, select the files to be displayed using the mouse or keyboard. Next, either choose "Slideshow" from the "View" menu, or click in the box to the lower right corner of the file list screen.

Have you ever wished that you could just back up during a slide show? Now you can. Just use the left arrow on the keyboard, and GDS will back up to the previous image. The "Home" key will also return you to the first image in the slide show.

To change the slide show delay, you must specify the /Z<*n*> command line parameter when GDS is started. This option sets the slide show delay in hundredths of seconds (1/100th). For example:

```
GDS /Z100
```

This command line will make GDS use a 1.0 second delay rather than the default 3.0 second delay.

You can also perform slide shows from the command line. Just specify the path(s) you want GDS to search for files in and specify the /S command line option when GDS is started. GDS will quietly show all of the pictures indefinitely.

If you want GDS to show one or more pictures and then return to DOS without clearing the graphics mode, use the /X option. This option is very handy for putting opening screens on text only programs, and creating simple presentations.

15, 16 and 24 Bit Slide Shows

You may notice that GDS does not display 24 bit images during some slideshows. This happens for two reasons. If you do not have any 15, 16 or 24 bit display modes available, GDS skips 15, 16 and 24 bit images because they would take far too long to convert for a slide show to be effective. If you have the video mode locked to anything other than a 15, 16 or 24 bit mode, then GDS will skip 15, 16 and 24 bit images during slideshows because of the time it would take to convert.

Supported File Formats

GDS supports most of the common formats:

BBM	Deluxe Paint "brush" files (1/4/8 bit)
BMP	All Windows BMP (1/4/8/24 bit)
FLI	Comes with QUICKFLI.EXE and plays .FLI files (available memory may inhibit playback)
GIF	Certified 100% GIF87/GIF89a compliant by CompuServe
GL	Comes with GRASPRT.EXE and plays .GL files (available memory may inhibit playback)
IFF	Electronic Arts' IFF files (1/4/8 bit)
LBM	Deluxe Paint II PC compatible (1/4/8 bit)
MAC*	MacPaint (monochrome page files)
PCC	PCX "clip" files (similar to PCX)
PCX	Verified with 47 separate weird PCX dialects (1/2/4/8/24 bit)
SC?	ColorRIX PC/Windows compatible
TGA	Supports Targa files (8/15/16/24 bit)
TIF**	All TIF formats (1/2/4/8/15/16/24 bit)

* Read only.

** Compressed TIF not supported. Note: Compressed TIF files are generally not recommended for being transportable.

Technical Support

Technical support is available from 9AM-5PM PST at (510) 449-9079. Support is handled on a first come, first serve basis. You can also FAX questions to (510) 449-3519; please include all relevant information about your video hardware and system configuration.

International customers: FAX communication is more reliable than phone support.

/~A<*n*>	Use white backgrounds for catalogs. Default is white (1).
/~B<*n*>	Turn off automatic centering of slideshows. (Default=1) To turn off centering, use /~B0
/~E<*n*>	Inhibit slideshow screen erase between similar images (FAST)
/~F<*n*>	Enable color proximity elimination in color reduction process
/~G<*n*>	Generate optimized grayscale palettes (G1, default=G0)
/~L<*n*>	Set initial length of dynamic file list cache size for GDS. The maximum number of files GDS can handle is 2848. The default for this option is 200. You may save a very small amount of RAM by setting this number lower if you use GDS with fewer than 150 files at a time. Setting this number to 50 will save 3450 bytes of RAM. As the file list grows, GDS may run out of memory, which will stop GDS from adding valid files to the file list. This should not happen unless GDS is trying to deal with thousands of files. Paths are handled separately and there is no practical limit to the number of concurrent paths GDS can handle.
/~O<*n*>	Set default file sort mode (0=name/1=size/2=bits/3=res/4=extn)
/~R<*n*>	Force aspect ratio of all catalog files to 1:1
/~Z<*n*>	Always try to write new files to startup path
/<*name*>	Set video chipset support (see GDS.CFG file for list of names at the left edge of each set of modes.)
/512	Assume video card has at least 512K
/1M	Assume video card has at least 1MB of RAM, and perhaps more
@<*file*>	Read file list from text file: <*file*> (ie: `GDS @file.lst`)

Saving Pictures

Sometimes after viewing an image and playing around with it, it is necessary to write the image, however modified, to a file. This can be used to convert images, but converting images is much easier using the "Convert" menu.

To write the current screen to a file when viewing a picture use the appropriate <Alt+*key*> command listed in the previous section.

You can also crop the screen image so that only a particular rectangle is written out by using the <Alt+C> command. To use this command, press <Alt+C> and the use the mouse to click on one corner of the crop rectangle, drag the mouse to the opposite corner of the crop rectangle, and finally release the mouse button. The next save command will only write the rectangle specified with the <Alt+C> command.

To reset the crop rectangle to the full screen, use the "View Mode Menus" described in "Viewing Pictures" above.

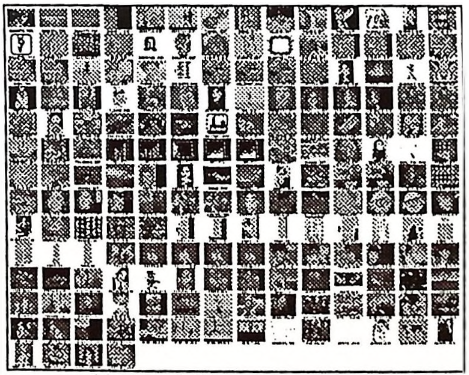
Catalogs

To create a catalog, select all pictures to be included in the catalog and choose "Create Catalog" from the "View" menu. If you leave all of the files deselected, then a catalog will be created using all available files.

If you are using a lot of files or if some of the files are on a network, don't worry too much about the delay while scanning files. GDS needs to read every file to identify it before a catalog can be created.

GDS shows a prototype of the first catalog screen and allows you to make several adjustments before the catalog is actually created. You can use the up and down arrow keys to change the number of thumbnails to be displayed per catalog screen. The up arrow increases the number of thumbnails, while the down arrow decreases it.

You can type "L" or "B" to toggle the "Labels" and "Borders" on and off. When you do so, you will be able to see the effect immediately, and GDS displays other relevant information about the overall catalog. For example, GDS tells you how many images per screen, how many images are to be cataloged, the resulting number of screens to be generated and the number of wasted tiles on the last screen. Sometimes it is better to play around with the configuration in order to get the best possible catalogs.



14x14 Catalog Screen of 186 pictures